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Publishers' Announcement

As of August 1, 1926, the interests of The India Rubber Publishing Co., New York, publishers of THE INDIA RUBBER WORLD, were merged with those of Edward Lyman Bill, Inc., also of New York; and as we especially desire the trade to obtain precise and authentic details of this matter we publish below the signed statements of the principals involved.

"The many friends of THE INDIA RUBBER WORLD will be interested and pleased to know that The India Rubber Publishing Co. has become a division of the well known publishing house of Edward Lyman Bill, Inc., of New York.

"THE INDIA RUBBER WORLD, under the same editor and staff as in the past, but with greatly enlarged publishing facilities, will continue its policy of service, accurately and fairly as of yore. Its alliance with this eminently successful publishing house is to make for still greater efficiencies and a much wider distribution of THE INDIA RUBBER WORLD.

"We confidently promise to all of our readers a paper, bigger, better and of an influence ever commensurate with the great and growing industry of which it is an integral part."

(Signed) Henry C. Pearson,
Editor, THE INDIA RUBBER WORLD
President, THE INDIA RUBBER PUBLISHING CO.

"We have been publishing business papers for 47 years and never during this period have we associated with our group a publication of richer heritage or fuller promise than THE INDIA RUBBER WORLD.

"This publication was founded 37 years ago by Henry C. Pearson and has been under his active guidance ever since. A publication of this age, under such guidance, to such successful purpose, is not to be tampered or tinkered with by any publishers' clinic. That the present publishing alliance embraces no such procedure, whatsoever, is the one big thought that we, the new element, wish to impress on the readers of this publication throughout the world. We thoroughly realize that these readers, through long and intimate contact with THE INDIA RUBBER WORLD have come to clothe this publication with a certain character and personality of its own—a distinctive quality that is to be greatly cherished and hence most certainly retained.

"To this end we are exceedingly happy in the knowledge that, in this alliance, Henry C. Pearson continues to be editor and all members of the staff retain the respective roles wherein they have so long and faithfully contributed to the eminent success of this property. What the personnel of THE INDIA RUBBER WORLD has given the reader and adver-

tiser in the past it will continue to give in the future, as there is no change. What facilities a larger, older, and more diversified publishing organization might give toward furthering the scope and influence of this publication it shall be our purpose to provide. This combining of publishing strength without dissipation of publication character, we earnestly believe assures the rubber industry, for all time, a journalistic representation fully adequate to its ever increasing demands."

(Signed) Edward Lyman Bill, Inc.

* * *

From the above statements it should be evident that a most harmonious and propitious alliance of publishing interests has been affected that cannot but augur well for the future of THE INDIA RUBBER WORLD. In identifying the new publishing element, we think it of pertinent interest to remark that Edward Lyman Bill, Inc., is one of the outstanding business publication houses of the country, controlling at present, among its numerous enterprises, ten business papers in various fields, with each one the distinct leader therein. Furthermore, as publishers of the monthly merchandising publication, TIRES, and the quarterly reference publication, THE TIRE RATE BOOK, they are by no means new to at least a major branch of the rubber industry. This circumstance permits the monthly production paper, THE INDIA RUBBER WORLD, to fit into a most happy combination and complete a group that now converges at one source journalistic representation of Rubber in all its ramifications.

Banning Rubber Planting Bubbles

THAT Americans will before long become actively interested in tropical agriculture is generally conceded; and no factor is exerting greater influence in that direction than the eagerness to assure for American needs an ample supply of crude rubber at a uniformly fair price. It will not be surprising, therefore, if in the near future many excellent propositions are submitted for financing rubber raising in Brazil, Mexico, Central America, Africa, or the Philippines; but it would be a matter for keen regret if any of the worthy enterprises failed of their purpose because adroit schemers had, in street parlance, already beat them to it with rubber raising promotions the real object of which would be to sell stock rather than to establish an industry.

Some such schemes are about to be launched now, the promoters hoping to make a big clean-up by capitalizing the idea of American-grown rubber before meritorious projects are ready to be presented to investors. One such promotion with a pretentious title has a plausible prospectus telling of extravagant profits to be made in growing and processing guayule in Mexico. Eminent international rubber experts are quoted and misquoted, statistics are distorted, and the success of astutely managed and soundly financed corporations is instanced to lend color to the claims of the shady prospect.

Promoters trust that the public has forgotten the rubber bubble that burst in Mexico scarcely twenty years ago, leaving a wreckage of $20,000,000. But the postal authorities may see to it that the lesson will not be lost, and, while striving to safeguard the unwary, will also help to thwart any schemes the failure of which might shake the confidence of investors in projects of real advantage to the nation in either peace or war.

The Rubber Symposium

GREAT has been the material progress made by the rubber industry during the past few years, and no small part of this remarkable growth has been due to the rubber chemist. Emerging from the old time, self-centered policy that safeguarded every formula and process, the present day chemist realizes fully the importance of interchanging viewpoints and technical information

The coming Rubber Symposium is epochal in that prominent British, Dutch and American rubber technologists will discuss the botanical, chemical, and engineering developments relating to crude rubber and rubber latex. Controversial subjects, however, will be excluded from the symposium. The topics under discussion will be confined to purely scientific, technical and economic questions brought out by the papers to be read at this meeting by speakers of international prominence.

Far-reaching will be the benefits of this conference to the entire industry through the dissemination of first-hand unprejudiced knowledge regarding present and future rubber developments, both from the plantation and manufacturing viewpoint.

MANY RETAILERS WERE DISAPPOINTED BECAUSE WHEN crude rubber dropped close to 40 cents a pound there was not a corresponding slump in rubber goods prices. Evidently they do not realize that between the time when rubber is bought and when it is manufactured, and the articles distributed, as much as six months may elapse. Hence the benefit of cheap raw material in June may not be felt until after Christmas; and even then it cannot be assured.

THE NEWEST SYNTHETIC RUBBER COMPOUND IS "CYCLO-pentadiene caoutchouc," said to be a methylene derivative of butadiene and a hydrocarbon which can under the influence of certain catalysts (as tin tetrachloride) be polymerized and form a viscous, rubber-like mass. It can also be swelled in the common rubber solvents and even be vulcanized with sulphur chloride in chloroform solution. But, sad to say, it costs about $80 a pound, and there appears to be no way to cheapen it.

A Glossary of Words and Terms Used in the Rubber Industry

XXII[1]

Insulation—Wires—Cables—Tapes—Compounds

Cable—Continued

Stage Cable. A theatre cable similar in construction to a border light cable except that it is designed for more extensive service; and the conductors are laid up with jute or other fillers before applying taping and overall braid. See Border Light Cable.

Straightaway Bunched Cable. A cable in which group conductors are arranged in parallel instead of twisted formation. See Bunched Cable.

Telegraph Cable. A cable designed for conveying signals, usually composed of a group of conductors, well insulated separately and collectively, and protected usually with a metallic sheath. Types include the following:

Artificial Cable. An insulated conductor used with a rheostat in systems of duplex submarine telegraphy, affording a circuit with associated resistance and capacity; analogous to the artificial line in duplex aerial line telegraphy.

Field Signaling Cable. A form of durable, flexible cable made for army use consisting of a solid core with high grade rubber insulation, over which is a less dielectric rubber covering, a serving of jute, a straightaway lay of galvanized steel wire, and an asphalted jute covering.

Floating Dry Dock Cable. A twin-flat, flexible cable for connecting the submerged part of a dry dock with the section above water or with a land line; sizes various, cores, rope lay stranded, rubber insulated, double taping of varnished cambric, and overall of two braids saturated with insulating varnish.

Intermediate Cable. A cable partaking somewhat of the character of a submarine or ocean cable and a shore-end cable.

Ocean Cable, Rubber Insulated. A deep sea telegraphic cable having several stranded rubber insulated conductors, each covered with rubberized tape, padded in jute, again taped, having an inner cover of asphalted jute, a galvanized steel wire armor, and an exterior cover of asphalted jute. See Submarine Cable.

Rubber-Gutta Percha Cable. A cable, usually with sector cores in which the conductors are insulated with a compound having a high percentage of pure rubber The interstices are filled with gutta percha, or a gutta substitute, and a like material is used solely for sheathing. In cables designed for submarine service such sheathing material is used under and over wire armor. A "Pernax" Cable. See Sector Cable, Compound, Insulating, Pernax.

Rubber-Gutta Percha Graded Cable. An undersea graded cable for high tension service having the core covered with several layers of rubber to a thickness of 5.5 mm., over which is a 1.2 mm. coating of gutta percha, a cover of dry jute, and a 3 mm. armor of No. 18 A. W. G. steel wire. For three-phase work and to guard against self-induction three such cables are bound together, and each of the steel wires is wrapped in tarred hemp before being wound about the separate insulated cores. See Graded Cable.

Subaqueous Cable. A relatively light underwater single, double, or multiple cable for use in rivers, lakes, or comparatively shallow bodies of water; core insulation of rubber, impregnated paper, or varnished cambric; usually with jute filling between the conductors, the latter covered with rubberized tape, lead encased, served with jute yarn, and armored with closely wound galvanized iron (steel) wires; also called subfluvial cable. See Armored Cable, Lead Covered Cable, Subfluvial Cable.

Subfluvial Cable. An under river or lighter form of submarine cable. See Subaqueous Cable, Submarine Cable.

Submarine Cable. A cable designed for conveying current chiefly for signalling under rivers, bays, ponds, lakes, or seas, the earliest use of which was in 1811, when experiments were made with an insulated wire or cable laid under the River Isar near Munich, Germany; but the first practical use of an undersea cable is said to have been made by Schilling in 1812, when he used insulated wire laid under deep water near St. Petersburg, Russia, to explode gunpowder. Substantially, an underwater electric cable consists of a single wire or a strand of wires forming a core, or a combination of cores, embedded in insulating and protective materials, and covered with a lead sheath or coiled, galvanized iron (steel) wires. The immediate insulation of each conductor is usually rubber or gutta percha for long-distance deep sea telegraphic service, each conductor being separated from the other with some resinous or bituminous substance, overlaid with a moisture repelling padding of jute or hemp, and armored with coiled wire or lead sheath. See Cable, Ocean Cable, etc.

Submarine Telegraph or Telephone Cable. A multicore cable for telegraph or telephone service having a central group (in one type) of eight rubber insulated stranded conductors covered with rubberized tape and coiled about which are eleven similar conductors also taped, the whole assembly being taped, served with jute cord, covered with weatherproof braid, and armored with heavy galvanized steel wire.

Submarine Telegraph Loaded Cable. A new type of submarine telegraph cable for which remarkable efficiency is claimed, a special advantage being a traffic capacity four times as great as that of standard cables of similar size; and the construction of which is similar except that, before the gutta percha insulation is applied, the copper core is wrapped with spirally wound flexible copper tapes to carry the current around the gap in case the wire breaks, and then in reverse spiral with a tape of permalloy (a new, remarkably soft and highly magnetic iron and nickel alloy) 6-1000 of an inch thick. This permits of inductive loading similar to that of long distance land telephone lines. Over the gutta percha is a jute cushion wrapping, eighteen steel armor wires, and an overall wrapping of tarred hemp cords.

Submarine Telegraph Signal Cable. A multiple conductor cable for telegraph or signal service having seven cores of stranded wires, each core rubber insulated, the assembly jute padded, bound in rubberized tape, having a double serving of jute, and armored with galvanized steel wires.

Telephone Cable. A cable designed for telephone communication, usually comprising many conductors with relatively light insulation, a heavy group overall insulation, and protective sheathing. Types include the following:

Anti-Induction Telephone Cable. (1.) A cable in which the telephonic conductors are so paired, looped, or spiralled as to neutralize induction from contiguous circuits. (2) A telephone cable in which a metallic sheath exterior to the conductors and grounded at frequent intervals is used for overcoming induction from neighboring circuits. See Paired Cable.

Copyrighted by Henry C. Pearson. Continued from *The India Rubber World*, August 1, 1926, pp. 251-252. See also Crude Rubber and Gutta Percha Definitions, *The India Rubber World*, 1921; Pneumatic Tire Definitions, *The India Rubber World*, 1921 and 1922.

Dry Core Cable. A standard type of multiconductor telephone line cable, in which each conductor, as Nos. 19, 20, or 22 A. W. G. wire, is insulated by being wrapped spirally with fine dry (unimpregnated) smooth or crinkled paper, in some cases four-fold, and each pair being wound with contrasting colors to distinguish polarity and to facilitate the making of connections, and twisted. The cable core consists of many such pairs, the alternate pairs being spiralled in one direction and the intermediate layers in reverse order to secure a non-inductive core and overcome "cross talk" tendency. The core is wrapped in heavy manila paper and oven dried to get freedom from moisture, and give maximum insulation and minimum electrostatic capacity; and finally given a seamless lead sheath. An aerial dry core cable contains usually 13, 25, or 50 pairs, and an underground (led through ducts) 50, 100, 200, 400, or 600 pairs. In a dry core cable advantage is taken not only of the insulation of paper but also of the dielectric quality of the air separating the wires from the paper. See Paper Insulation, Paper Cable.

Foil-Taped Telephone Cable. A single core type of deep sea telephone cable of recent design having a single, solid, tinned conductor to carry the "whole load" heavy vulcanized rubber insulation, spiral copper foil taping for return current, having moistureproof braid, lead sheath, jute covering heavy wire armor, and a close serving of jute well tarred. Capable of transmitting, with a variated frequency device, seven conversations simultaneously.

Interphone Cable, Standard. A cable of assembled single or paired conductors; tinned copper; insulation, one silk and one cotton braid; color coded; cable core saturated with beeswax compound; overall cotton braid saturated with flameproof paint; line wires No. 22 A. W. G. and battery wires No. 18 A. W. G. Also lead sheathed instead of braided overall.

Paired Cable. An aerial multiple main line telephone conductor composed of numerous pairs of small rubber insulated wires twisted about each other, and twisted in turn about other pairs, to eliminate induction trouble due to "cross talk"; conductors encased in rubberized tape and braid or lead sheath; a twisted pair cable. See Magpie Cable.

Switchboard Cable. A telephone central station cable composed of many paired conductors; tinned copper; insulation, one serving of silk and one of cotton; twisted in pairs; color-coded, cabled, and having an overall of cotton braid, and wax saturated and polished, or with cotton braid saturated with flameproof paint. Also lead sheathed instead of braided overall. Dry insulation for conductors when specified.

Tap Cable. A short, lead-covered cable connecting a telephone aerial or main cable with a distributing box on a street pole. See Intake Wire.

Test Sheath Cable. A submarine or underground cable having a thin metallic conductor sheath over the overall insulation of the conductors, and which is also insulated and finally lead sheathed. Used in a detective protective system. See Alarm Cable Wire.

Tinned Cable. An underground cable, the lead sheath of which is coated with tin to safeguard it from chemical action in moist earth.

Tinned Copper Cable. A stranded conductor composed of tinned wires encased in a rubber jacket and having one or more overall cotton braids saturated with black weatherproof compound and polished. Used for open and conduit wiring for potentials of not over 600 volts. See Rubber Covered Wire.

Toll Cable. A multiple telephone cable for distributing messages; a paired cable. See Paired Cable.

Torpedo Cable. A relatively light lead encased cable of undersea type used for electrically exploding a torpedo. Made with single core for branch and multicore for main cable.

Torpedo Wire Cable. A light single, stranded conductor used for exploding submerged mines or torpedoes; primary insulation of high quality rubber and secondary of commercial vulcanized rubber, covered with heavy braid well waterproofed, and having an armor of helically coiled galvanized iron wires. Made to U. S. Navy specifications.

Trailing Cable. A single or double conductor suitable for use in mines, quarries, etc., where abrasion is likely to be extreme; usual construction is fine stranded wire with good grade vulcanized rubber, spiralled with rubberized tape, hard cord braiding, leather strip braiding, wrapping of stout rope, braiding of stout twine waterproofed, and overall wrapping of rope interlaced with galvanized, steel wires.

Train Control Cable. A multiconductor flexible cable for connecting controllers, contactors, etc., on electric railway cars; cores formed (usually) of 19 No. 25 A. W. G. wires stranded, cotton wound, rubber insulated; dry braid covering in separate colors, wormed grouping, dry jute fillers, rubber tape coating, and overall of two saturated braids.

Tree Cable Armor. A protective, open, single spiral of band steel laid between two waterproof braids overlaying the rubber or varnished cambric insulation of an aerial cable; designed especially for lines used in or near heavy foliage.

Triplex Cable. A cable made up of three separately insulated single conductor cables twisted together, and having usually an overall covering.

Trouble Lamp Cable. See Automotive Cable.

Trunk Line Cable. A multiple main line cable for conveying telephone messages.

Twin Cable. A cable composed of two separately insulated stranded conductors laid flat or parallel with an overall covering. Sometimes applied to "twisted pairs."

Twisted Cable or Twisted Pair Cable. Another term for paired cable. See Paired Cable.

Underground Cable Jointing. The union in original laying or repair of cable ends in such manner as to effect a core practically continuous and with undiminished conductivity, as well as possessing durability and mechanical strength, and affording ample insulation. Jointing may be executed by dry twist, welding, brazing, or soldering and with cement or wrapped insulation.

Varnished Cambric Cable. A single or multiple stranded moistureproof cable of high dielectric strength used as apparatus and station cable (which see) for low-voltage underground distribution, for buildings in which it can be substituted for rubber-insulated cable, for places in which insulation might be attacked by oil; or where, as in vibrating structures, lead sheathings, as on paper cable, might crystallize. In some makes treated cloth or paper, or asbestos is first applied to the conductor; but in standard practice the conductor is covered with many spiral windings of varnished cambric tape with the separate layers dry or coated with mineral base grease or some viscous compound to allow the tape layers to slide upon one another and thus add to the flexibility of the cable. Taping is usually covered with dry or weatherproof saturated cotton braid for apparatus cable; overlaid with weatherproof saturated braids and flameproof braid for station cable; with asbestos braid or cotton braids saturated with slow-burning compound for building mains; lead sheath for underground cable (which see); and used alone or with rubber-filled cotton tape overlaid with two galvanized steel tapes, with a layer of asphalted jute under and over armor for cables on outdoor structures.

(To be continued)

Rubber Mixing—II [1]

Effects of Plasticating—Mixing Rubber Batches—Internal Mixing —Batch Cooling

Effects of Plastication on Rubber

IN the report of the Physical Testing Committee of the Division of Rubber Chemistry[2] the following conclusions are stated with respect to the effect of plasticating by milling of a friction stock containing 93 per cent of crude rubber. (1) The stress-strain characteristics of the cured slab run parallel with the softness of the stock. (2) Milling at low temperatures leads to excessive softness of the uncured stock, which manifests itself even after curing in the softness of the stress-strain curve more noticeably in tensile. (3) The higher the temperature of the stock on the mill the less the time factor; that is, increase in length of milling time is less injurious at high milling temperatures. (4) The effect is purely physical, the rate of combination of sulphur being unaffected.

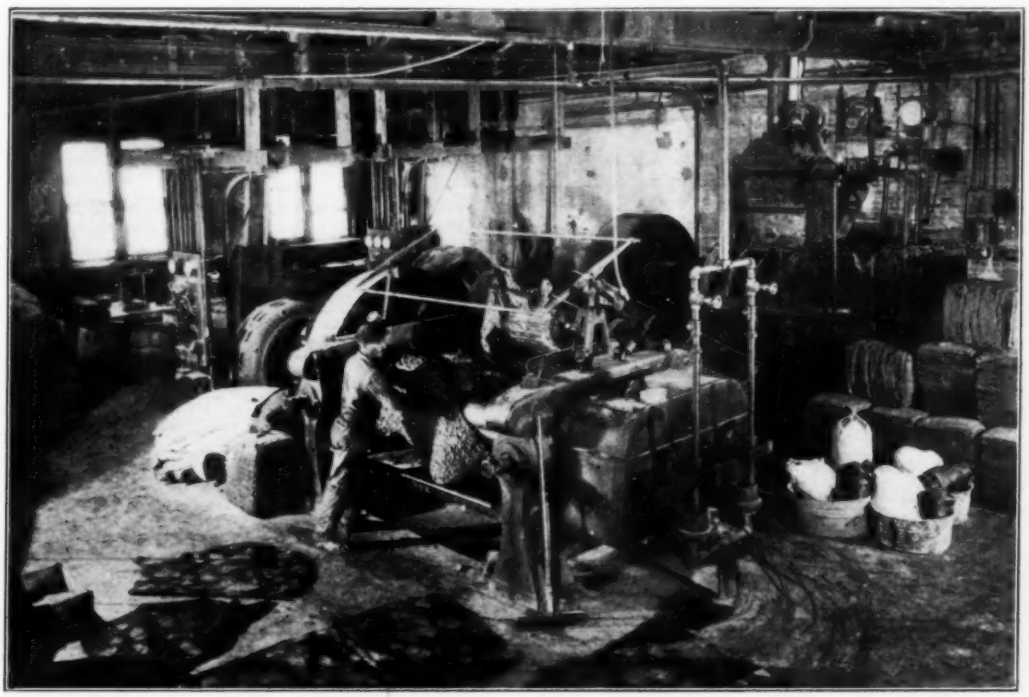
Testing Plasticity

A laboratory instrument has been devised for the measurement of the plasticity of rubber[3]. It consists of a special apparatus in the form of a small press with a plate free to be raised or lowered and so supported that it is always parallel to the plate upon which it rests. A dial gage indicates the distance between the upper and lower plates during the test. In making a test a pellet of rubber cut to a required weight is laid between two sheets of paper and placed between the plates of the apparatus where it is subjected to 5,000 grams pressure at 100 degrees C. and thickness readings taken from the gage at 3, 5, 10, etc., minutes. From these figures a thickness time curve can be plotted to show the plasticity of the sample.

When rubber is broken down on a large scale it is cut and rolled at the mills, and stored in racks to cool ready for mixing later. In case the mill man breaks his own rubber before mixing, the plasticated gum is not removed from the mill but receives the compounding ingredients at once.

Master Batches

The use of high-speed accelerators of vulcanization and other modern compounding conditions has led to the use of so-called master batches in many rubber mixings. In rubber working a master batch consists of crude rubber into which has been milled a high concentration of some ingredient, such as a very active accelerator. The purpose of the master batch is to insure uniform dispersion throughout the finished rubber mixing of a very small percentage of the accelerator. A definite weight of the master batch carrying a known weight of the accelerator permits the introduction of the latter as a much larger bulk addition and secures its uniform distribution throughout the mass of the rubber mixing. Allowance for the gum contained in the master batch used in any case is made by deducting its weight from that specified in the mixing formula. Master batches are commonly made with accelerators, carbon black, pigments, glue, etc.



Batching Stock from an Internal Mixer

[1] Concluded from *The India Rubber World*, August 1, 1926, pp. 253-4.
[2] *The India Rubber World*, June, 1925, pp. 535-536.
[3] *The India Rubber World*, May, 1924, p. 516.

Mill Mixing Rubber Batches

The boxes of weighed rubber, reclaim and compounding ingredients are received in the mixing room, by truck or conveyer, ready for mixing. The older and more general method of mixing is by use of the 2-roll mill, the same as that used for grinding or breaking down. Mixing mills were originally very small and slow; batches weighed much less than 100 pounds and mixing was done at lower temperatures than today.

The mixers' tools are few and simple comprising a knife with a very short pointed blade with which to cut the gum on the front roll; an ordinary bench brush and a short handle shovel. With these the earthy matters that fall through the rolls are swept up from the mill pan and returned to the rolls until they are all incorporated in the rubber.

The mill man, mixing a batch of compounded rubber, first puts the broken-down new gum on the mill with the reclaimed rubber, if any is used. A few minutes grinding suffices to soften and mingle these gums. In case mineral rubber or hard resinous materials are to be included in the mix they are milled into the gum base before the addition of the dry powders. Softeners are usually added with the dry ingredients to facilitate the incorporation of the latter and to assist an otherwise harsh or over-compounded mix to absorb the dry ingredients.

The bulked powders, etc., dumped into the mill are gradually absorbed by the softened gum rolling as a bank between the rolls. The operator occasionally cuts the stock on the roll, forming a fresh bank which hastens the mixing. The materials that fall below the rolls are returned until all are incorporated. When the mixing is complete it is uniform in texture and color and free from all streaky appearance.

Mixing Accelerated Batches

The percentage of accelerator to the rubber content of a batch is often less than one per cent and since it is essential that this small proportion should be uniformly distributed throughout the whole mixing, resort is had to adding the accelerator in the form of a definite weight from a master rubber-accelerator batch. This addition is made direct to the broken down rubber ingredients. The sulphur is held out when the other compounding powders are added and milled in last in the shortest space of time as the mixing is nearing completion. The hot mixed batch is cut from the mill in convenient slabs about ¼ or ½-inch in thickness and laid upon a heavy iron wire mesh table where access of air on all sides allows it to cool rapidly.

In the latest mixing practice, batch cooling is effected on a special rack-truck which has two banks of wire mesh or perforated trays to receive the slabbed warm stock. For loading, it stands adjacent to the mixing mills with one bank of trays pulled out ready to receive the stock as cut from the mill. The full truck load is removed to the compound and aging department.

Practical Hints

A stock can be mixed more rapidly on a hot fast mill but its quality will be inferior to the same mixing produced on a cool slower mill. Stocks mixed on a hot high speed mill are liable to come off in damaged condition due to being scorched or burned by which is meant partly vulcanized. When batches are not badly burned, however, they can be reworked with the addition of a suitable softener and rendered useable. Since the introduction of organic vulcanization accelerators, especially the more sensitive ones, mixing and warming the batch containing them requires more skill on the part of mill men. This condition has brought about the introduction of a radical yet effective preventive measure, namely the use of a certain amount of water allowed to drip into the batch on the mixing mill[6]. Thus, the temperature of the mixing is kept below the heat at which the accelerator is active and scorching is prevented.

[6] *The India Rubber World*, October 1, 1925, p. 5.

In regard to the effect of water on the batch 1-gallon on a 225 pound batch will take away heat equivalent to cooling the batch 90 degrees F. The proper time to add water is as soon as the rubber runs smooth around the roll. It is allowed to drip slowly on the gum bank so it will not fall through into the pan. The time required for mixing rubber batches varies from 10 minutes to ½-hour dependent upon a variety of conditions. The mixing time is set for each different batch and the output so scheduled.

Internal Mixing

Mixing rubber stocks by internal mixers involves much different handling than mixing them on a 2-roll mill. Larger batches of the same mixing can be made in much shorter time and with greater suppression of dust. The work is accomplished with less labor and more economically than by the ordinary mill. Rubber stocks are distinguished by rubber men as high or low grade with reference to their rubber content. Thus, master batches, inner tubes, most tires and a few mechanical rubber goods are considered high grade. All others rate as low grade.

The order followed in mixing a high grade stock such as a carbon black tire tread stock is substantially as follows: The rubber and rubber accelerator mixture are charged into the mixer followed by the softeners and all the compounding ingredients, except the carbon black and sulphur. The ram is lowered and the mixer operated six or seven minutes when it is opened to receive the carbon black and closed and operated for another six or seven minutes. The mixing is then discharged and the sulphur is milled into it and the stock slabbed off on a roll mill.

In the case of low grade stocks this method is varied because of the presence of reclaimed rubber. The first charge comprises the crude rubbers, rubber-accelerator mixture, reclaims, solid softeners, and compounding powders except carbon black and sulphur. After a mixing period of about six minutes the carbon black is added and milled a few minutes before the oils are added and the mixing completed within a maximum of twelve to fifteen minutes from the beginning. Sulphur is added and the completed stock batched on a mill.

Suitable minor variations on these procedures are made for handling other stocks. In every instance where sulphur is an ingredient it is added to the mixed stock on the batching mill.

In the case of master batches the rubber and ingredients are plasticated together before adding any oils, but carbon black is added in two successive portions after the oil softeners are in.

Cooling Practice

To reduce the temperature of the contents of the mixer a gallon of cold water or rubber latex can be added to a batch of several hundred pounds of tread stock shortly before its discharge from the mixer. This does not affect the plasticity and reduces the temperature of the mixing 25 to 30 degrees F.

The latest practice for cooling a batch in an internal mixer is to expel all air from the interior of the mixer with an atmosphere of carbonic acid gas delivered under high compression. The effect of the gas expanding within the mixer is to reduce its temperature much below that possible with water. Tire stocks thus mixed in an atmosphere of non-oxidizing gas are said to show an increase of 10 to 15 per cent in tensile strength.

Essentials of Mixing

The essential requirement in rubber mixing is the uniform distribution of the vulcanizing agents and the other ingredients in the rubber. This condition is well met by 2-roll mills. In the matter of meeting the mixed stock demands of modern tire and mechanical rubber goods production mixing mills are at a disadvantage. The development of inclosed mixers has met the heavier demand for stock with increase of economy.

The largest tonnages of mixed stock required for the output of modern tire and mechanical goods plants place 2-roll mixing at a disadvantage. They will continue as standard equipment but the internal mixer has demonstrated its greater efficiency for volume production at minimum pound cost.

Benzol an Industrial Hazard[1]

BENZENE, commercially called benzol, is a colorless, limpid, highly refractive liquid having a characteristic odor. It is obtained from the distillation of coal tar and from the strippings of coke oven gas. It boils at 80.2 degrees C. (180 degrees F.) yielding a very inflammable vapor, which on burning produces a smoky flame. Its specific gravity is 0.899 at zero degree C. (32 degrees F.). It is highly insoluble in water, more soluble in alcohol and completely miscible with ether, acetic acid and carbon disulphide. It is an excellent solvent for rubber, gums, fats and resins of various kinds.

In practice, three types of benzol are used in industry in addition to various other substances to which the name benzol is applied although without chemical justification. The usual commercial products are: (1) Pure benzol (described above); (2) ninety per cent benzol, so called because in the distillation of coal tar 90 per cent distils over at a temperature less than 100 degrees C. (212 degrees F.). It is composed of 80-85 per cent benzol, 13-15 per cent toluol, 2-3 per cent xylol, and sometimes contains as impurities traces of olefins, paraffins, sulphuretted hydrogen and other bodies; (3) fifty per cent benzol contains 50 per cent of constituents which distil below 100 degrees C. and 90 per cent below 120 degrees C. (248 degrees F.). It is a highly mixed product with only 40-50 per cent benzol, the remainder being higher homologues and other impurities.

The other substances often called benzols are various toluols, xylols and solvent naphthas. Solvent naphtha is so called because it is used, especially in England, for dissolving rubber. It is relatively free from benzol and consists largely of xylol, its homologues and other unknown hydrocarbons.

Benzol introduced into the body, which in practice ordinarily occurs as a result of inhalation of its fumes, exerts three more or less distinct major effects. It plays the part of an anesthetic or narcotic leading to dizziness, faintness, and coma. It is at the same time, however, a nerve irritant producing characteristic spasmodic movements, and actual damage to nerve tissue. Coma and death may also result from this neurotic action as well as from the narcotic action of benzol. Above all, however, this substance possesses a definite and specific destructive power over blood cells and those organs which produce these cells.

As in the case of many toxic substances used in industry, benzol poisoning exhibits itself in two quite distinct forms, acute and chronic,—according as the exposure is brief and intense on the one hand or moderate and prolonged on the other.

In the rubber industry, in artificial leather manufacture, in sanitary can manufacture, in dry cleaning and in the use of paints and varnishes, benzol is employed as a solvent or vehicle under conditions which, almost of necessity, permit more or less evaporation of the solvent into the atmosphere. Here, there is relatively little danger of acute benzol poisoning, but very great danger of chronic poisoning, arising from prolonged or repeated exposure to the fumes.

In order to minimize such hazards as far as possible, there are two general types of precautions which should be taken, tending respectively to decrease the degree of exposure and to detect and control incipient poisoning in its earliest possible stages.

To diminish exposure, enclosed processes should, of course, be used wherever possible and, whenever containers are cleaned or apparatus repaired, the special precautions dealing with acute poisoning should be observed. Wherever employes are likely in the course of their work to be exposed to benzol fumes, as in the ordinary solvent and evaporative processes or in handling the products of such processes, they should be protected by the most effective local exhaust ventilation designed according to the following general principles.

Where benzol is evaporated at room temperatures, air removal by local exhaust ventilation with downdraft is recommended, although in certain enclosed processes direct ventilation, from the enclosure, with upward draft may be indicated.

Where localized heat is applied in the evaporation of the benzol, hoods or enclosures should be provided with updraft local exhaust. This draft should be sufficiently intensive and applied so closely to the point of origin of the evaporating benzol as to insure the complete removal of all of the benzol before the heated surface is removed from the hood or enclosure. This recommendation deals with specific processes where sufficient upward air movement is created by the heated surface to overcome the natural density of the benzol vapor.

Masks and respirators should not be relied upon to protect the worker against ordinary routine exposure to benzol fumes, since such devices cannot be made efficient without at the same time making them too uncomfortable to be worn continuously.

To detect incipient benzol poisoning at a stage when its effects can be minimized, it seems essential that all workers to be employed in processes where exposure to the fumes of this solvent is involved, should be given a thorough medical examination before employment and re-examined, with systematic blood counts, once a month thereafter. In addition to this routine re-examination, absence from work should be promptly followed up by some person conversant with the symptoms of benzol poisoning, and the employes themselves should be made familiar with the symptoms which are most likely to occur.

Laboratory investigations make it clear that certain of the higher homologues of benzene, such as toluol, xylol and hiflash naphtha, are relatively free from the special hazards which attend the use of benzene itself. These substances, in large doses, are even more powerful narcotics than benzol, but their low volatility and marked odors make it highly unlikely that they will occur in workroom air in sufficient concentration to produce effects of this sort. On the other hand, they are almost wholly lacking in those specific destructive effects upon the nerve tissue and above all, upon the blood-forming organs so characteristic of benzol. Under ordinary conditions of use, and in any concentrations in which they would be likely to occur in workroom air, these substances appear relatively harmless.

[1] Final Report of the Chemical and Rubber Sections, National Safety Council, Chicago, Illinois.

IN OUR WORLD TRADE, JANUARY-MARCH, 1926, PUBLISHED BY the Chamber of Commerce of the United States, Washington, D. C., the following comment is made concerning the increase in American rubber imports during the period in question:

The rise in the price of crude rubber and an increasing demand combined to make the value of such imports for the first quarter of 1926 more than three times that for the first quarter of 1925, an increase of $135,765,000, or 205 per cent in value and 59,932,000 pounds, or 30 per cent, in quantity. . . . . The sensational rise in crude rubber prices during the latter part of 1925 placed British Malaya at the top of our sources of supply for the first time in history, the value of our imports from the Malay Peninsula in the first quarter of 1926 being $85,422,000, or 140 per cent larger than a year ago. Imports from the other far eastern rubber producers, the Dutch East Indies and Ceylon, also advanced sharply, the former increasing $20,944,000, or 95 per cent, and the latter $10,708,000, or 130 per cent.

The Bedaux System in Rubber Factories

II. The Practical Working of the System

Advantages and Disadvantages Compared With Piece Work—Education of the Worker Necessary—Detailed Explanation of Department Analysis Form and Plant Posting Sheet

BEFORE attempting to change over a plant from piece work or hour system of wage payment to Bedaux, the rubber manufacturer should take into consideration several factors which have a vital bearing on the ultimate success of the plan. Perhaps the first one is the size of his plant. Records which are an integral part of the system must be accurate and up-to-the-minute; this entails an adequate clerical force, whose cost of maintenance is taken care of by the decreased unit cost as the premiums paid and the point hour increase.

In a small plant this added clerical expense would be felt more heavily, and many results obtained in large mills can be obtained without it in small ones owing to the close contact of the head executives with every detail of the business. It should be borne in mind, therefore, when considering this system, that most of the installations have been made in the larger plants, although there are several cases where smaller rubber mills have adopted these methods due to some executive who formerly worked under them in one of the big mills.

One of the advantages claimed for the Bedaux method is its simplicity. But this should be qualified. Give the average production executive contact with it in actual operation for a week's time, and he will have a good working knowledge of it. But for the employe or workman, it is not understandable. In one plant where it has been in successful operation for over five years, not a workman could be found who could sit down at the end of the day and figure out accurately how much money he had earned that day. He would know that he worked 10 hours and got 50 cents an hour, or $5. He would know how many tires he built, how many shoes he made, how many heats of soles he molded, and his lost or idle time, but what point hour he made and how much money in premium he earned would remain a mystery until the sheet was posted.

Yet these workmen had no complaint with the system, in fact the majority preferred it to piece work. This is a tribute to the management which spent the time and money to install it and was conscientious enough to operate it under the principles which are eminently fair to the employe. But to install it is a long, educational process. Every operation has to be studied from the Bedaux standard of measurement especially with reference to consideration of strain according to the curve worked out after five years of research. Getting workmen to think and talk the language of the system cannot be accomplished at once. In fact to accomplish the task successfully has usually required the organization of a Bedaux department whose sole aim is to install and operate the system. Results over a period of time have shown that it pays.

Bedaux has often been criticized because he does not enter the field of labor and equipment. In a discussion on this point at a meeting of the Taylor Society several years ago, the remark was made that if Bedaux were to set a standard on a certain machine, and the man making the study found it running upside down, the study would be made with the machine operating in this manner. While this may be exaggerated, it nevertheless reveals the dominant characteristic of the system in that it deals only with measurement of human power. Each manufacturer is considered the best judge as to the methods and machines he can employ to the best advantage in his own particular plant. If outside advice is desired, he is well satisfied to leave that field to the consulting engineer.

Another advantage of Bedaux over piece work is that it measures the efficiency of supervision and gives the foremen the incentive of extra rewards for efficiency. In the plants where this feature has been in operation, the foremen who shared in premiums were the interdepartment foremen who had direct charge of opera-

DEPT. SECTION QUARTER, 19

	OPERATORS			HOURS			BEDAUX					OPER	ALLOWED B3		
Week Ending	Prod.	Non-Prod	Below Stand.	Product.	Non-Prod.	Total	Productive on Stand.	Productive at 60	Set up	Scrap	Total	B-Hr.	To Equal Standard	Idle Time	Breakdown
4-11-21	33	11	11	1561.0	540.0	2101.0	95040			444	95524	69.0	4976	3095	190
4-18-21	34	12	9	1637.0	554.0	2191.0	105332			343	105675	72.0	5972	3455	730
4-25-21	34	11	9	1035.0	367.0	1402.0	70567			442	71009	72.0	4696	1435	175
5-2-21	34	12	4	1593.0	576.0	2169.0	116687			449	117136	73.0	9282	340	490
5-9-21	27	12	3	1304.0	576.0	1880.0	97648			490	98558	80.7	9317	435	
5-16-21	29	12	6	1407.8	559.9	1960.7	102830			691	103721	73.9	5306		
Quarterly Fig.															

	DIVISION OF PRODUCTIVE PAYROLL						COST PER B					
Week Ending	Total	Prod. at Std.	Prod. at 60	Set up	Scrap	Allowance	Product.	Stand.	Prod. at 60	Set up	Scrap	Allow
4-11-21	$790.67					$129.00	$0.00752	$0.00496				$0.00134
4-18-21	870.47					116.60	0.00726	0.00716				0.001105
4-25-21	571.01					57.80	0.00809	0.00727				0.00082
5-2-21	903.68					41.60	0.00774	0.00739				0.000567
5-9-21	796.33					58.30	0.00803	0.00744				0.000596
5-16-21	839.92					77.20	0.00815	0.00741				0.000745
Quarterly Fig.												

Fig. 1—Bedaux Department

tions. Department superintendents and supervisors did not share in this distribution for obvious reasons. The gang boss, who is really a foreman over a small unit, is directly responsible for production owing to the fact that he controls the men who deliver material to machines and keeps them supplied. Higher supervision is only indirectly connected with the success of operations and is more interested in the ultimate result of the scheme than in any direct material rewards from it. In one plant under Bedaux, the foremen were paid a nominal salary at a rate slightly lower than competing plants for the same job; if their unit attained a department point hour of 80, however, their own premium brought their wage up 25 per cent, giving them more than normal returns.

One of the evils of the piece work system is the fact that no matter how carefully the rates are set, they soon become either too high or too low, and inequal values result. Some will have soft jobs, some will have better machines, some will fail because of the fault of management. A cut in the rate cannot help but create a dissatisfied employe and deter him from working at his best. It very often causes him to leave, which makes the added expense of replacing an experienced operator with a green one.

Under Bedaux, the man is paid at so much per hour, which is the going rate for his skill or class job. If a general raise or reduction takes place, this rate is affected to be sure, but when applied to all alike there is not the opportunity for readjustment so often coupled with it under piece work. Standard Bs or the standard times for each unit operation are not revised except when improvements in methods and equipment require. When an inexperienced man is hired for a job it is customary to start him at a nominal wage for a two week period. If at the end of this time he shows progress his pay is increased halfway between the going rate for the job and the rate at which he was hired. At the end of six weeks if his progress is normal he is in line to be advanced to full rating and should be earning premium.

glance as to how this particular department is progressing toward (1) keeping overhead down, that is number of nonproductive operatives compared with productive, and (2) breaking in new or inexperienced workers. Thus productive workers decreased three in number in July over April, nonproductive increased by two, but below standard operators decreased from 11 to 1.

The heading "Bedaux" covers in the column "Productive on Standard," the number of Bs produced by productive operators on work on which B values have been set. A B, it will be remembered, is the number of minutes or fraction of minutes it takes to produce one unit with a time allowance for fatigue based on the rapidity of the cycle. The figures are obtained from the work records. The column "Productive at 60" is for record on operations on which no B values have been set. The column "Set-Up" is used to record B's on set-up work on which B values have been set. The column "Total" equals the sum of the other columns (in the example shown "Productive on Standards," plus "Scrap"). It represents the total energy expended.

The operator B or Point Hour is equal to the "Productive on Standard" divided by the number of "strictly productive hours." These equal "Productive on Standard" in Bs, divided by "Productive Hours" minus the quantity "Total" (under allowed B's) minus Bs allowed to equal standard, divided by 60. For example to obtain the "Operator B-hr" in the first line,

$$\frac{95{,}060}{1{,}561 - \dfrac{18{,}511 - 6{,}976}{60}} = 69 \text{ (approx.)}$$

The value of 69 is a measure of the operators in the department. It represents the operator's speed while working on productive work.

The columns headed by "Allowed Bs" are self-explanatory. The figures under "Department B-hr" measure the department

ALLOWED Bs			Dept. B-Hr.	NON-PRODUCTIVE Bs						Week Ending
Reaper	Misc.	Total		Supervision	Handling	Clerkship	Maintenance	Shutdown	Total	
1150	7100	18511	61.0	2880	29505				32385	4-11-21
1215	4840	16252	64.0	2880	30945				33225	4-18-21
934	965	7955	68.0	1840	22180			4160	26180	4-25-21
1627	370	5634	73.0	2880	31650				34530	5-2-21
1593	3304	7849	75.0	2880	31665				34545	5-9-21
1115	4026	10444	70.1	2880	30594				33474	5-16-21
										Quarterly Fig.

Non-Prod. Payroll	COST PER B				RATIO OF			Super.	Base of Super. Premium	Premium		
Total	Non-Prod.	Std. N-Prod.	Total	Std. Total	Allow to Std.	N.-Prod. to Prod	Std. Tot. to Tot.	B-Hr.		Bs		Week Ending
$232.47	$0.00245	0.0020	$0.01077	0.00896	0.195	0.29		50.7				4-11-21
254.07	0.00241	0.0020	0.01067	0.00916	0.154	0.29		55.0				4-18-21
166.52	0.00264	0.0020	0.01073	0.00927	0.113	0.33		58.8				4-25-21
231.33	0.00198	0.0020	0.00972	0.00939	0.0783	0.256		70.6				5-9-21
231.57	0.00236	0.0020	0.01039	0.00944	0.0502	0.244		68.2				5-9-21
224.51	0.00217	0.0020	0.01032	0.00941	0.101	0.266		63.8				5-16-21
												Quarterly Fig.

Analysis Form

Figure 1 shows the analysis form which is as complete and comprehensive a picture of a factory's efficiency progress yet devised. The heading "Operators" covers the total number of operators, which equals the productive plus the nonproductive. The column "Below Standard" shows the number of productive operators below standard. This particular record which covers a period of six weeks gives the superintendent an idea at a glance as to how this particular department is progressing toward (1) keeping overhead down, that is number of nonproductive operatives compared with productive, and (2) breaking in new or inexperienced workers. Thus productive workers decreased three in number in July over April, nonproductive increased by two, but below standard operators decreased from 11 to 1.

as a whole (in contradistinction to the values measuring the operators on strictly productive work). They are obtained by dividing the "Productive on Standard" by the total hours of the producers. To obtain the 61 in the first line, 95,060÷1,561=61 (approx.).

The columns under "Non-productive Bs" are self-explanatory. So are the columns under "Division of Productive Payroll," and

"Cost per B," with one exception, the column, "Standard Non-productive," which is determined by observation. In other words, studies are made to determine how many men each department should carry on non-standardized jobs such as trucking, sweeping the floor, and miscellaneous jobs which are not capable of being put on standard.

The columns appearing under "Ratio Of" are obviously clear. The figures under "Supervision B-hr" are found by dividing the total actual B cost into the product of the department B-hr, and the standard total B cost. To obtain the value in the first line, 61 X 0.00896÷0.01077=50.7 (approx.).

The "Basis of Supervision Premium" is determined by the ratio of trained help to new help. The Premium Bs equal the supervision B-hr. minus the "Base of Supervision Premium." Under ideal conditions the figures presented in the three columns that are headed "Operator B-hr.," "Department B-hr." and "Supervision B-hr" should be the same.

Figure 2 shows the Plant Posting Sheet. The cut shows two units of the posting sheet. General practice is to make it large

Dept. Sect. Week Ending

	No. 1038			52		No. 1246			38				
	NAME Harry Duell					NAME John Russo					NAME		
Day	Hours	Total Bs	Bonus Bs	B Hour	Premium	Hours	Total Bs	Bonus Bs	B Hour	Premium	Hours	Total Bs	Bonus Bs
M	10	840	–	84	1.26	10	466		46				
T	10	864	–	86	1.38	10	483		48				
W	10	902	–	90	1.59	10	590		59				
T	10	856	–	86	1.35	10	296		40				
F	10	830	–	83	1.21	10	455		49				
S	5	400	–	80	.52	5	290		58				
WEEK	55	4692		84.8	7.31	55	2508		46.7				

Fig. 2—Plant Posting Sheet

enough to contain postings of 18 or more operators. Operator No. 1,238 is figured at the rate of 42 cents per hour. The record of operator 1,246 is posted in red ink because his measurement is below 60. One of the methods used to encourage operators to pass 60 B is to post all below 60 in red. These forms, particularly the department analysis, reveal the scope of the system fully and should be thoroughly studied in order to grasp the full significance of the scheme.

It will be seen that the Bedaux system aims to establish a standard measurement of labor, the essential part of the scheme being a relaxation curve the values of which are determined by trial. The unit of measurement of accomplishment, called B, is one minute divided into time for work and time for rest.

The explanations and statements made in this article, reflect only the experience of the writer in one factory, and therefore should not be taken in a general sense.

Philippine Rubber Planting Problems

The whole question of the proposed American development of the rubber lands of the Philippines is beset with difficulties, both economic and political. As a result, while there has been much discussion by all parties concerned both in the Philippines and the United States, the question is at present undecided, with comparatively little that is definitely accomplished. Colonel Carmi A. Thompson, President Coolidge's personal representative, is, however, continuing his survey of economic conditions in the islands, and on his return will report as to his findings. He is endeavoring to learn whether the Moros really want a continuance of American rule, as they do not want to be governed by the Christian Filipinos, or whether they favor the Bacon bill or some other plan to separate the islands of Mindanao, Sulu and Palawan, otherwise Moroland, from the rest of the Philippines. The possibilities of rubber growing in the island of Mindanao will be especially studied, as it is believed that this one division could produce 200,000 tons of crude rubber yearly. The undeveloped public domain of the entire Philippines comprises 73,000,000 acres.

Meanwhile Harvey S. Firestone, Jr., who has been spending several months in the Philippines, has been consulting with President Coolidge, particularly in regard to a bill proposing certain changes in the Philippine land laws. Mr. Firestone said in part:

At present no corporation can own in the islands more than 2,500 acres. It is proposed to limit the holdings to 500,000 acres and give a lease for 75 years, after which time the rubber plantations revert to the Government.

The soil conditions in some of the islands are especially good, and all that is needed is favorable legislation. My belief is that the law will be amended and that American capital will go into the enterprise. Mindanao has 25,000,000 acres with a soil that is very fertile and adapted to rubber planting. Less than 10 per cent of this acreage would in time take care of the rubber requirements of America.

The bill to which reference has been made is known as the Rubber Land Act and was introduced August 9 in the lower House of the Philippine Legislature. The bill stipulates that 61 per cent of any corporation leasing rubber lands must be owned by citizens of the United States or the Philippines, while it also requires that 25 per cent of the land be planted to rubber within fifteen years after execution of the lease. After the sixth year lessees must also pay an annual rental, while no lessee shall hold more than 50,000 acres in one tract.

Not all rubber experts, however, agree that a change in the land laws is necessary. According to the *Journal of Commerce* smaller holdings are advisable, as well as cooperation with the native planters:

Experience in the Malay Peninsula shows that from 4,000 to 5,000 acres is the average holding in that region. In Sumatra and Borneo experiments have been made with what is termed "native rubber"—that is, rubber grown by the natives on their own little farms, and usually prepared by them for the market. It has been suggested that a system of rubber planting somewhat analogous to the "colono" method of contracting for sugar crops with native growers could be developed in the Philippines. By it the rubber companies would furnish the natives with seed and help supervise the growth of the trees, and would buy the "latex," as the sap is called, from them at a price agreed upon in advance.

Opposition by Filipino Statesmen

Apparently American control of the rubber lands of the Philippines, particularly to any large extent, is being strenuously opposed by all classes in the islands, Manuel Quezon, President of the Philippine Senate, recently making the following statement:

We are unalterably opposed to any amendment of our land laws by the American Congress. In the Jones law of 1916 Congress placed the disposition of the public domain of the Philippines in the hands of the Philippine Legislature. We think there would be no justification for Congress to resume control of our public domain.

Since the establishment of civil government in the Philippines Congress has never assumed legislative control of our public domain except to the extent in limiting to 2,500 acres the area of public land that could be owned by a corporation. In other words the limitation originally was imposed by Congress itself.

The reasons for our attitude are both political and social. Politically, we fear that the ownership of large tracts of land by American corporations would increase the opposition to our future independence and perhaps actually prevent Congress from granting it.

Sergio Osmena, a Philippine senator and prominent worker for the independence of the islands, has suggested that a solution of the Philippines problem might be found in the appointment of a commission composed of both Americans and Filipinos, which might be able to work out a plan of administration. Senator Osmena is a colleague and former political opponent of the President, Manuel Quezon.

PRODUCTION IN VENEZUELA OF BALATA AND CHICLE HAS IMPROVED somewhat with the coming of the rains, but prices are falling, and conditions in the industry do not appear to be favorable.

Tire Fabric Tendencies

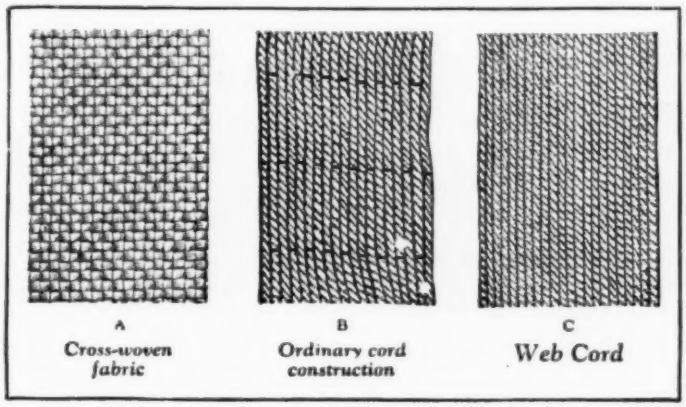
Early Developments—Passing of Square Woven Fabric—Web and Weftless Cord Construction—New Cord Fabric Types—Tire Production and Fabric Consumption

FROM the early days, when pneumatics were nothing more than a piece of large diameter hose evolved from the bicycle tire to the balloon cords of the present, cotton and rubber have been the two basic materials used in the manufacture of automobile tires.

Fabric Construction Development

The proper type and construction of fabric has always been a major problem in tire development. Beginning in 1891 when the bicycle pneumatic first made its appearance, experiments were carried on with every conceivable type of manufactured fiber, including linen, hemp, silk, bed ticking, and sheeting, until 1895 when the square woven construction was adopted. The theory of this fabric was that with an equal number of warp and filling threads, the strength and stretch would be balanced properly. The threads were also spaced far enough apart to allow penetration of rubber between them.

From the adoption of the square woven type no important change in tire fabric construction was made for nearly twenty-five years when the cord construction was worked out, and by 1922 more than half the tires in this country were made the new way. Today nearly 98 per cent of the pneumatic tires produced are cords.



Throughout the development period of the automobile and the tire, from 1910 until 1920, improvements in the fabric were worked out along the lines of strength in the cotton. The finest combed, long staple yarns from Sea Island, Sakalleridis and other Egyptian cottons were used, and the 17¼ ounce, 23/23 square woven fabric would show a breaking strength of as high as 300 pounds on both warp and filler. Tire mill men of today recall these fabrics not only for their great strength but also for their smooth, soft, silky appearance. The Egyptian and Sak could always be distinguished by their creamy color in contrast to the milky white of the Sea Island.

With all this strength and fine quality of cotton, however, tires were generally unsatisfactory, yielding but 5,000 to 6,000 miles at best, and frequently blowing out at mileage considerably under these figures, especially if allowed to go underinflated for a short period. Thus by experience tire engineers learned that not only strength in the cotton but a better union between the rubber and cotton was required to obtain flexing properties and eliminate friction.

In the square woven fabrics, it was impossible to force rubber between the interwoven strands, with the result that under road conditions the strands chafed constantly, causing separation and blowouts. This condition was accentuated in the frictioning and coating of the fabric because it was impossible to keep the balance of stretch and strain in the duck, which was often built into the tire with the fibers taut and all the stretch eliminated, thus cutting down and often preventing the necessary flexing property.

With the introduction of cord fabric, made of 23/5/3 yarn construction on the warp and the filling merely a light thread spaced 2½ to 5½ to the inch to hold the cords together while processing, it became possible to immerse the cotton more completely in rubber and eliminate much of the old trouble.

Original Rubberizing Methods

One of the first methods used to rubberize cord fabric was running it through a spreader for the first coat, then coating both sides on the calender. This proved to be unsatisfactory owing to the fire hazard, the excessive cost of spreading, and the danger of not evaporating completely the solvent, which resulted in separation in the tire. Direct frictioning on the calender was then tried with indifferent success. By exercising special care in winding the cord on the mandrel, locking the end in place, and experimenting with the proper tension, it has been done and still is being used in smaller mills, but calender waste is excessive and the cords become twisted and distorted. It can be done much more successfully with 5½ pick cord than 2½ pick. Another common method was to give the cord a light calender coat on one side, then friction the other, following with the final coat on both sides. Figures show that the penetration of rubber by this method is not nearly so great, however, as by direct frictioning.

Transition from Square Woven to Cord Fabrics

In the change from square woven to cord fabric, at first cotton and tire men worked on the theory that strength in the cotton was a necessary requirement. When the Toron treating process first appeared, which was a method of immersing the cotton with a turpene compound to seal the fibers against oxidation, increase the tensile and the affinity between cotton and rubber, the great selling argument was that tire manufacturers could use karded American peeler cotton as against Sea Island and save money. This process never became universal and has since been discarded, but the transition from high tensile Sea Island and Egyptian cotton has been complete and without any detriment to the quality of tires.

Combing Process Discontinued

It was discovered that the combing process not only removed much of the highly desirable quality of elasticity in cotton, but that it also made the fibers so smooth and soft that they did not adhere to the rubber as well as the rough karded yarns. Originally, combing was practised particularly on fine dress goods, or any particular fabric requiring very high counts of yarn, and especially on mercerized yarn. There is no doubt that a yarn of a higher luster, slightly cleaner, is produced by combing. However, this process removes the elasticity from the yarn and

therefore has been discarded in the manufacture of tire fabric.

The universal adoption of American karded peeler which followed, meant that in 1921, a depression year in the rubber industry, manufacturers paid 65 to 70 cents a pound for fabric, whereas in 1920 they had been paying as high as $2.15 a pound. This saving made possible a quicker recovery in the industry, gave the American public the benefit of much cheaper tires, and safeguarded against the possibility of higher prices due to foreign control of an essential raw material such as rubber.

Elasticity and Twist

The matter of twist and elasticity required in cord fabric is a subject of great importance especially since the advent of the balloon tire. To determine these factors the most convincing test is the road test of tires made from cord under consideration. There is need, however, of more exhaustive tests, and still not as expensive or time consuming as tire road tests, or even tensile strength tests under oscillating stresses. Balloon tires have shown that elasticity is far more important than formerly, therefore the elastic properties of cord should be given more careful attention than heretofore. It has been remarked that cord of high tensile does not give good results if the twist is too high.

An idea of how completely the desired requisite in cord fabric has changed from strength to elasticity can be gained from the following figures taken from the laboratory tests of cord fabric over a five year period. These show the breaking strength in pounds on the Scott machine of one cord 5/23-5/3 construction: 1920, 25, 21¾; 1921-23, 17½, 18, 18½, 17½, 18, 16, 19, 18; 1924-25, 15, 15.6, 15, 14.8.

Web Cord Fabric

From the cord fabric, a new type of construction known as the web cord was developed. It was reasoned that if cord tires were better than square woven, they would be improved by eliminating the filling thread altogether. The difficulty came in handling web cord fabric in production. According to the perfected method, a sufficient number of cords to form the required width of fabric are run from cones supported on a creel through thread boards and a comb over a roller where they are brought into parallel relation to each other and then down through a bath of latex with which they are impregnated. The cords then pass to a set of dry cans and when dry they are held firmly together by the rubber deposited from the latex, thus forming a fabric which is wound up and handled as other fabrics in the subsequent calendering and tire building processes.

Web fabric and other types of weftless fabrics have superseded cord fabric in practically all of the big tire factories, and if the weftless cord becomes universally adopted, the tire fabric mill of former days will pass out of existence as a weaving plant. No looms are required to make this fabric, merely the machines for spinning, spooling, and twisting, if the yarns are furnished.

In the preparation of cord fabric, rubber companies' methods differ only in the process used in applying the rubber. United States gives the cords a bath of rubber latex; Firestone uses the gum-dipped method with an elaborate solvent recovery apparatus. This differs from the old spreading method in that the cords, instead of passing under a knife where the cement is spread on the surface, are impregnated by being completely immersed in the rubber cement. At Fisk, on small size tires, some success has been attained with running the cords from a creel back of the calender, giving them a direct coat. United States, Goodyear, Goodrich, Firestone and Fisk are now using some part of their fabric requirements in the form of web fabric made from yarn on cones.

It is significant that most of the large tire manufacturers now operate cotton mills, and it is not difficult to visualize the rubber mill of the future with cord spinning, spooling, twisting, and cabling departments under the same roof.

New Types of Cord Fabric

There also has been a transition from 23/5/3 or 15.1 ounces per square yard to 23/3/3 weighing 13¾ ounces when made up in 23 ends to the inch. A new specification known as a high stretch, low break cord is made from full 1 1/16 staple cotton. The construction is 15/3/3 and when made up in 23 ends weighs 11 ounces. With a stretch of 24 per cent and a 12½ pound break, this fabric is especially good for a second line of tires. Although it sells for the same price per pound as a 23/5/3, there is a saving of 6 cents a square yard over the latter.

Balloon Tires and Fabric Requirements

When balloon tires first gave indication of becoming universal, tire fabric manufacturers became apprehensive of a lessened demand for fabric, because the tires were larger in overall area and used more rubber, yet the plies were in some cases reduced 50 per cent. Figures show that in 1925 tire manufacturers produced 60,900,000 tires, using 168,000,000 pounds of fabric or an average of 2.59 pounds per tire, whereas in 1924 they produced 51,600,000 tires using 142,000,000 pounds of fabric or an average of 2.73 pounds per tire. Indications for 1926 are that the still greater swing to balloons may cause the average to go lower, but, on the other hand, the tendency to increase the plies in balloons and development of this type of tire for motor buses may offset this decrease.

Interdependence of Fabric and Rubber

If the high rubber market had persisted there would no doubt have been a pronounced tendency to replace British grown rubber with American cotton in tires, as there is a point on a cubic foot basis where the cotton becomes cheaper to use. But on the other hand, the ideally constructed tire needs plenty of rubber to maintain its life and flexibility, and just enough cotton to give it body and shape. In reality the two great raw materials are both essential in the proper proportions and so manufactured to make them as nearly one unit as possible.

COMING MEETINGS OF S. A. E.

Coming sessions of the Society of Automotive Engineers include the following: an aeronautic meeting to be held September 2 and 3 at the Bellevue-Stratford Hotel, Philadelphia, Pennsylvania; production meeting and exposition, September 21 to 23, at the Hotel Sherman, Chicago, Illinois; transportation and service meeting, November 16 to 18 at the Copley-Plaza Hotel, Boston, Massachusetts; a tractor meeting, to be held in Chicago, the date undetermined; the annual dinner, January, 1927, New York City; and the annual meeting, January, 1927, Detroit, Michigan.

NEW REGULATIONS REGARDING GAS TUBING

In order to prevent accidents from defective gas connections the New York City Department of Health has been instrumental in securing an amendment to the Sanitary Code, prohibiting the sale of gas tubing of inferior quality. All tubing sold in New York must in the future have been registered with the Board of Health and bear the approval of that organization. Stringent penalties for violation of the regulations will be in force.

AUSTRALIA INCREASES DUTIES ON RUBBER TIRES

Increased tariff rates on various commodities, including rubber tires, became effective in Australia on July 9. The former British preferential rate for pneumatic tires weighing 2½ pounds or less, and inner tubes weighing one pound or less, has been 25 per cent ad valorem, but is now raised to 40 per cent, while the general rates have been advanced from 40 to 55 per cent. Larger tires and tubes carry this same tax, or *2 s* per pound at the British preferential rate, with the general rate at *3 s*. The same duties apply to rubber tires other than pneumatic.

Reclaim—A Potent Factor in Rubber Consumption

SCRAP tires and inner tubes are the principal sources of supply for reclaimed rubber of the best qualities. Secondary and inferior qualities of reclaim are derived from the classified collections of all other scrap rubber goods. One might naturally infer that from such sources it would be practically impossible to derive closely standardized grades of reclaimed rubber. In fact, however, reclaimers are as successful as the rubber goods manufacturers in standardizing their products. This is because the work of grading, chemical processing, and final refining of reclaims are all under rigid and close physical and chemical control. Thus the entire reclaiming industry is operated on a scientific basis, and has fully justified the expectations of American rubber manufacturers by aiding them to cope successfully with the difficult crude rubber price situation of the past two years.

The outcome for the reclaimers is an advanced technical status for their product as indicated by Bierer and Davis whose work, and that of other rubber technologists, has expanded the usefulness of reclaims to the extent of making them a more pronounced factor in modifying crude rubber demand and prices. In fact, progress in the technical evaluation of reclaims has been so marked that they are now being used in tires to an extent not generally realized, yet without detriment to the practical serviceability of the goods. Construction, stocks and cures are closely balanced while the selection of accelerators, reinforcing agents, and the maintenance of gum quality on the basis of tested equivalent volumes, are all subject to laboratory and service test control.

The commercial bearing of this situation is reflected strongly in the statistical record covering the past few years of the reclaiming industry. In the past year consumption of reclaim in the United States exceeded that of the year previous by 50,000 tons, and plant enlargements now in progress or completed will advance the annual output capacity to about 200,000 tons.

Official statistics of the consumption of reclaimed rubber are not available. The following tabulation, however, compiled from conservative trade sources indicates the growth of the reclaiming industry since the war:

UNITED STATES CONSUMPTION AND VALUES OF RECLAIMED RUBBER

Year	Tons	Price per ton	Values
1919	69,000	$280	$19,320,000
1920	70,500	220	15,510,000
1921	35,000	180	6,300,000
1922	50,000	170	8,500,000
1923	63,000	180	11,340,000
1924	73,000	170	12,410,000
1925	114,000	220	25,080,000
1926*	150,000	200	30,000,000

* Estimated

These figures show the decline due to the general business slump in 1921 and the subsequent rapid recovery. If reclaim consumption continues at anything like the rate shown for the past two years the reclaiming industry will soon exceed $50,000,000 annually in value of output.

As suggested above, the reason for this phenomenal growth is found in the need of American rubber manufacturers for rubber at moderate prices and their determination to utilize the most available resource without sacrifice of serviceability in their goods. The tire industry uses by far the largest proportion of crude rubber and has absorbed most of the recent increase in reclaim production.

The extent to which reclaim now enters the construction of tires is shown by some typical instances of substitution. Tires are divided into three general qualities: (1) the best, (2) medium, and (3) mail order grade. In point of service the best is rated at 15,000 miles or over, and can be produced with a tread containing 50 per cent crude rubber and 20 per cent reclaim where previously no reclaim was employed. The medium or 10,000 mile tire is a price proposition and may contain 60 per cent of reclaim in the tread and friction, to 20 per cent of crude rubber. The mail order or 5,000 mile tire may contain no crude rubber in either tread or friction, but instead 80 per cent of the super quality tire reclaim.

The motoring public expects to receive adequate mileage service in any grade tire it purchases. The recognition by manufacturers and technologists of the possibilities of reclaimed rubber has enabled them to meet successfully this expectation. One practical device for balancing price and quality in the matter of material cost is by the use of a series of tested formulas in which the crude and reclaimed rubber items are varied on the basis of changes in the crude rubber price level.

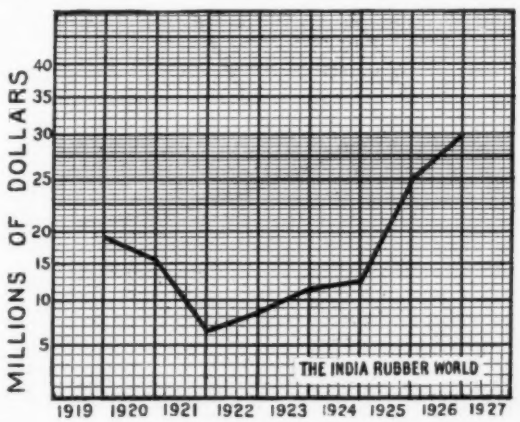
UNITED STATES CONSUMPTION OF CRUDE AND RECLAIMED RUBBER

Year	Crude Rubber Tons	Reclaimed Rubber Tons	Ratio of Reclaim to Crude Rubber Per Cent
1919	202,303	69,000	34.0
1920	196,270	70,500	35.8
1921	169,308	35,000	20.8
1922	283,271	50,000	17.5
1923	274,956	63,000	22.0
1924	301,956	73,000	24.0
1925	382,183	114,000	30.0
1926*	360,000	150,000	41.5

* Estimated

The above table gives the consumption of crude and reclaimed rubber in the United States from 1919 to 1926, also the percentage ratio of reclaim to crude rubber. The falling off in this ratio in 1921 and 1922 was due to the record low levels of the prices then prevailing for crude rubber.

These levels were practically below that of the best reclaims and virtually eliminated the function of reclaim as a cheapener of stocks. That crude rubber did not entirely stop the consumption of reclaim at that time was due to the fact that even low grade reclaims have intrinsic technical properties differing from those of crude rubber that make it more suitable for certain processes



Ratio Graph of Reclaimed Rubber Values

of rubber goods manufacture. The increase of the ratio subsequent to 1922 shown in the table is due to the recovery of crude rubber prices under restriction. While the ratio in 1925 did not reach the levels it attained in 1919 and 1920, the actual tonnage of reclaim consumed is rapidly rising.

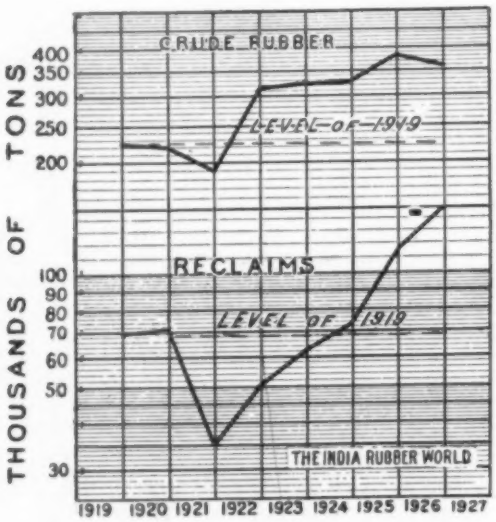
A clearer conception of the growing importance of the reclaiming industry is given in the following table showing consumption of crude and reclaim in tons and its percentage increase or decrease compared with 1919 figures, and with those for each succeeding year for the period covered.

INCREASE OR DECREASE IN UNITED STATES CONSUMPTION OF CRUDE AND RECLAIMED RUBBER

	Crude Rubber			Reclaimed Rubber		
		Increase or decrease compared with			Increase or decrease compared with	
Year	Tons	1919 Per cent	Previous Year Per cent	Tons	1919 Per cent	Previous Year Per cent
1919.....	225,000	....	....	69,000	....	....
1920.....	220,000	2.25*	2.25*	70,500	2.0	2.0
1921.....	190,000	15.5*	13.5*	35,000	50.5*	50.5*
1922.....	315,000	40.0	61.0	50,000	27.5*	43.0
1923.....	325,000	44.5	3.1	63,000	8.75*	26.0
1924.....	330,000	46.5	1.5	73,000	5.8	16.0
1925.....	385,000	73.5	16.5	114,000	65.0	56.0
1926†.....	360,000	60.0	6.5*	150,000	117.5	32.0

* Decrease. † Estimated.

The percentage gain in consumption of reclaim since 1922 as shown for each year compared with the record of its previous year is particularly interesting as indicating the revised status of reclaimed rubber and its relative value as a factor in the rubber manufacturing industry.



Ratio Graph of Crude and Reclaim Consumption

The increase and decrease in the United States consumption of crude and reclaimed rubbers with reference to their respective tonnages used in 1919 are herewith charted in graphic form. The chart brings out in forceful manner the following important features.

The slump in consumption that took place in 1921 affected the rate of consumption of reclaim much more seriously than it did that of crude. The consumption of the latter in 1922 greatly exceeded that of the 1919 level, due to the abnormally low rubber prices. While the consumption of reclaim did not reach that of the 1919 level for nearly 3 years after 1921 it has continued at a much higher rate of increase than crude, and on the basis of the 1926 estimates will have effected actual reduction in the consumption of crude by 25,000 tons.

The increase of reclaiming capacity to 200,000 tons or more annually indicates that reclaimers are confident that the future consumption of reclaim will advance at least to that level. In fact, judging by the trend of the reclaim curve that goal will be reached by the end of 1927 at the present rate of progress.

EXPORTS FROM BRITISH GUIANA OF BALATA ARE SAID TO HAVE declined from the 1921 figure of 1,390,402 pounds, value $977,395, to 904,784 pounds, value $543,033 for 1925. Corresponding exports of rubber have however risen from 1,650 pounds, value $359, for 1921 to 10,752 pounds, value $7,179 for 1925.

Crude Rubber Hedging

Many manufacturers of rubber goods overlook the advantages offered by the new Rubber Exchange of New York. They are particularly keen in practising economy in manufacture of their product. Sales policies, fire and liability insurance, safety devices and overheads are scrutinized with care and reduced to a minimum of expense, but when buying crude rubber for future delivery, they leave themselves open to market fluctuations which may spell loss—a loss that could have been obviated or materially reduced by hedging their operations on the Rubber Exchange.

To clarify the subject, Maurice Tingley, vice-president of Paul Bertuch & Co., Inc., of New York, cites an example: A rubber manufacturer who has an opportunity to secure a large order sees that for the coming two months his position of raw materials with respect to orders for manufactured goods is practically equal. The factory will need about 100 tons of crude rubber a month to fill this order which may take several days to buy. Meanwhile the factory is at the mercy of the market. A straight manufacturing profit of 15 per cent is in sight, which could easily be jeopardized or lost entirely by a sudden jump in the market before the crude rubber needed could be bought. If the factory takes the order it should at once buy through a dealer member of the New York Rubber Exchange contracts for 100 tons a month, September, October and November, thus securing the 15 per cent manufacturing profit, for no matter which way the rubber market goes this profit is protected.

The next step is to secure the physical rubber. There is no hurry now as the price is set, so let us say, for example, that the 15 per cent profit is based on a 50 cent market and that the 300 tons of Rubber Exchange contracts were closed at that price. The grades of physical rubber needed are: 50 per cent ribbed smoked sheets; 25 per cent amber crêpe; and 25 per cent rolled brown crêpe. The Rubber Exchange price of 50 cents is based on the value of ribbed smoked sheets, but when it comes to the purchase of physical rubber, they may have to pay a fraction of a cent more, no matter what the price on the Rubber Exchange is, so that the factory will get the terms required and the desired quality from the dealer. If the factory took delivery from the Rubber Exchange they would not get the grades needed for the compound.

So far so good. On the day that the Rubber Exchange purchase was made, let us say physical ribbed smoked sheets were quoted 50½ cents; ambers, 47½ cents; rolled brown, 43½ cents. The factory is now in a position to pick and choose. If the market goes up 10 cents per pound nothing is lost, because the factory owns a Rubber Exchange contract which could be sold now at 60 cents. But it is the rubber that is needed to fill the order and make the 15 per cent profit, so the factory accepts the first favorable offer of physical rubber either ribbed smoked sheets, amber crêpes or rolled brown, and immediately sells the same amount of Rubber Exchange contracts back again, thus keeping the purchase price unchanged.

At the time the Rubber Exchange price was 50 cents the prices of physical rubber were: ribbed smoked sheets, 50½ cents; ambers, 47½ cents; rolled brown, 43½ cents.

The market has advanced 10 cents per pound, and had the factory not been covered, the 15 per cent profit would have been wiped out and a loss incurred, however, as it is, the factory still owns the Rubber Exchange contracts, which are now worth 60 cents per pound. Let us assume that physical ribbed smoked sheets could be bought at 60½ cents, ambers at 57½ cents and rolled brown at 53½ cents, so the factory immediately sells the Rubber Exchange contract. This supplies the physical rubber at the calculated price, protects the 15 per cent manufacturing profit, and the cost is slightly less than ½ cent per pound for the Rubber Exchange commission.

There are many other instances when hedging operations on the Rubber Exchange would be of benefit to the manufacturers of rubber goods in safeguarding their contracts.

Disease Factor in Rubber Plantations

What the United States Department of Agriculture's Pathological Survey in the Amazon Reveals—Need of Preparation to Assure Future Rubber Dividends

By Vincent Sauchelli, B.Sc.

WITH a dramatic suddenness almost unbelievable, the American people have recently learned that several of their important industries are almost completely dependent upon foreign nations. Chief of these is the automotive industry with its dependence upon crude rubber. As a result of wide publicity given to the subject, this country is at present acquiring a healthy education in tropical agriculture and economics. One distinctive result of this awakened interest is a realization that we have a vast tropical domain in the Pacific whose enormous potentialities have never been rightly appreciated nor has the fact of trusteeship for the development of these rich territories been fully understood by the American public.

Our Trusteeship in the Pacific

But times change. The need for raw materials by all the advanced industrialized nations of the world has served to emphasize the future importance of the essentially agricultural tropics. Sir Frederick Lugard, a foremost British administrator in Africa, speaks as follows:

"We are not only trustees for the development and advance in civilization of the African but we are also trustees for the world of very rich territories. This means that we have a duty to humanity to develop the vast economic resources of a great continent."

With the same emphasis we could substitute the Philippine Islands for Africa and bring home to the American people their obligations to their Pacific territories.

Effect of Publicity

Already the newspapers and magazines of the country are reflecting an increased interest in our foreign possessions by publishing special articles on tropical things in general and on rubber growing in particular. Our Government at Washington has also shown signs of appreciating this popular interest. As a consequence President Coolidge has sent a special personal envoy to the Philippines for the purpose of getting detailed reports primarily on the economic status of the Islands on which to base his recommendations to the next Congress.

The Conquest of Disease

In any consideration of tropical investments, the disease factor is always a very prominent item—both in its human as in its agricultural application. The conquest of disease always precedes any conquest by man of a tropical area. We all know how very true this was in Panama where the conquest of yellow fever was essential to the successful completion of the Canal.

If rubber is to be grown on any large scale in the Philippines there ought to be made in advance a systematic survey of the fungi and plant diseases in the islands that may be identical with or related to the known diseases of the Hevea tree in the existing rubber areas of the world. Such a survey would give pathologists (and through them plantation owners) advance information on those fungi having potential ability to attack rubber or any other economic plant under consideration. Had such a survey been made in the Dutch East Indies and in British Malaya in the early history of plantation rubber, millions of dollars would have been saved the industry. Only for the fact that rubber in Asia had been so enormously profitable up to the last decade was the disease expenditure tolerated. But as time goes on and plantation rubber becomes more and more a highly competitive industry, every schedule in the all-in costs will have to be trimmed down to a minimum. It has been proved that disease expenditures can be controlled if prophylactic measures are instituted at the start. Americans will have abundant experience to profit by in any future undertakings.

Ignorance Too Costly

Agricultural science in most tropical regions is only in its infancy. For this reason if American capital is to be used extensively in the Philippines or in any other tropical region it is essential from a good business sense to provide for emergencies by getting as soon as possible in advance all practical information on the existence of tropical plant diseases and parasites. There is tdo little information on hand regarding the pathology of the Hevea rubber tree in the Philippines and in tropical America. As to other rubber trees our knowledge is practically nothing. Thanks to a splendid bit of research work done by the United States Department of Agriculture under the direction of its experienced pathologist, Dr. James R. Weir, our knowledge of the fungus diseases of the Hevea rubber tree in the Amazon Valley has been considerably augmented. But this is only a sample of what ought to be done throughout our insular possessions before any extensive planting is undertaken.

Disease a Government Problem

Of course, the problem of disease in agriculture is too big for any single private organization to tackle. It is a matter for Government. Private organizations can cooperate. The business man has a right to demand that Government furnish him beforehand information obtained by comprehensive pathological surveys. For it is the whole people's business to promote the production of a necessary plant product, especially if that product is monopolized by another country.

An additional reason for these preliminary disease surveys is that a study can be made and a record taken of all fungi on a given host before clearing away the native jungle. This is because many fungi which appear unimportant under forest conditions may cause great damage to the cultivated crop which supplants the native forest. This very thing has occurred in the case of the Hevea rubber tree. Many fungi thought to be saprophytic (that is, feeders on dead jungle stumps), became parasitic to Hevea, a tree not native to the far eastern jungle. Had these fungi been properly understood from their host relationships in other parts of the tropical belt, adequate precautions could have been taken in time to prevent huge economic losses.

What the Department of Agriculture Survey in Brazil Reveals

The United States Department of Agriculture Bulletin 1380 makes a very important contribution to our knowledge of the pathology of the Hevea rubber tree and is all the more valuable as having been made by a thoroughly competent man investigating in the original native habitat of this tree. A summary of the different parasitic enemies records about three hundred known fungi and ten mistletoes—these being reported from the various

sections of the tropical belt where Hevea rubber trees are cultivated. It comes as somewhat of a revelation to many to learn that even in its original environment in the Amazon jungle, the Hevea tree is constantly struggling against natural enemies. It is not strange then that under plantation conditions, this same tree requires constant care to protect it against pests and diseases.

A few quotations from the Bulletin will serve well since the ideas are so neatly put and rather good on practical points:

Many of the problems with which the rubber grower is concerned are in intimate relation to the fungus agents of disease. In the South American region this is especially true. . . .

The number of species of fungi recorded on Hevea in the Amazon Valley seems unusually large. It is small, however, in comparison with the number associated with some of the economic crops of the world. . . .

In the tropics where plant pathology is in its beginning, it seems desirable to record all fungi on a given host, for the reason that under the conditions of clearing away the native forest, fungi which now seem unimportant may later cause disease on the introduced crop. This has been largely true in the case of Hevea. . . .

The studies in the Amazon Valley show in no small way the economic importance of the factor of disease in relation to the more permanent crops and the revenue therefrom. . . .

Speaking of the present rubber areas of Brazil, he says:

Practical work on the fungus diseases of important crop plants in the Amazon Valley has been entirely neglected largely because of the inactivity of the people and the popular belief that the native plant products are inexhaustible and may be exploited in any manner that one with the necessary capital sees fit. Consideration of future economy by conservative methods of tapping and general care of trees, with a view to the promotion of future yields on the same site, is not a part of the plan for collecting rubber by the present owners of estradas. The rubber operator literally slashes right and left; and when the trees no longer respond to the methods employed he moves to unworked areas. This treatment of the more accessible trees has resulted in enormous damage, so that a large percentage of the wild rubber growth near the streams is in a condition no longer suitable for tapping. It is unlikely that many of these trees can be brought back to a proper state of health under a well regulated forest working plan. After the more inaccessible areas are worked, the growing of rubber in plantations must of necessity be undertaken. Since the conditions in the Amazon Valley are suitable for growing enough rubber to supply the world, provided proper measures are taken to protect the crop against diseases, this will necessarily be the next step.

Some Important Hevea Diseases

The Hevea tree is attacked above and below ground by parasites. There are root diseases, stem diseases and branch and leaf diseases. In the Far East, the rubber planter of the early days had very vivid recollections of the destruction plant diseases are capable of. For it was immediately following the wiping out of the coffee industry in Ceylon and South India that most of the old coffee planters turned to rubber planting. Because the coffee disease had not been recognized as dangerous until after a ten years' start the coffee plantations were ruined. Speed of course is the factor in the control of disease and this was appreciated to a certain extent in dealing with the early incidence of disease on rubber plantations. Today the rubber plantation industry has little fear that any disease will go unchecked or undetected because the men in charge and the government know how important it is to provide control measures.

The South American Leaf Blight

Dr. Weir reports a leaf disease on Hevea that is widely distributed throughout the Amazon Valley. He found it causing damage to planted rubber everywhere in the lower Amazon region; so much so that it is considered the most serious disease of Hevea in the American tropics.

A potent leaf disease is a thing to be dreaded. Control measures such as spraying are out of the question in the tropics where daily rains, the height of the trees and lack of skilled personnel are insuperable obstacles. When the report first appeared in 1916 that the leaf disease called *Dothidellaulci* had practically destroyed all rubber plantations in Dutch Guiana, and would make extensive plantations in the American tropics impossible, a great stir was created in the Far East. Government regulations were at once instituted to keep out all Hevea plant materials from Dutch and British colonies. This leaf fungus disease is the most serious menace to the industry.

In the East the root diseases and one branch disease give most concern but they have been kept under control. A leaf disease causes some damage in Ceylon and in Burma during the wet monsoon. The stem disease called Brown Bast is caused rather by tapping methods than by parasitic agencies; and milder tapping and rest restores the tree to its normal latex yields.

One point stands out clearly in all investigations of disease—that is, immunization by breeding from known resistant types of trees on areas which have been cleared of stumps and other decaying timber. A thorough study of the different disease-resistant types among the various species of Hevea and among crosses of these several species would be very welcome to all workers in this field.

The planter who is going to grow rubber in any part of the tropics will have to provide for necessary disease work. It is something that has to be met, as has been the case in the Far East. It is an item that is incidental to the successful growing of any crop anywhere in the world. So, when the extensive plans for rubber growing in the Philippines and other areas of the tropics are matured by American interests, it is sincerely hoped that they will have the foresight to include in their practical plans a program for thorough pathological surveys before any planting is done. These surveys can be carried out by their own private technical staffs or in cooperation with government agencies. To neglect the disease factor in tropical agriculture is unwise, unpractical and economically wasteful.

RUBBER FOOTWEAR EXPORTS FROM UNITED STATES, CANADA AND UNITED KINGDOM

Annual exports of rubber boots and shoes are reported in detail by only three countries manufacturing these goods, these three supplying, according to the Department of Commerce, about 60 per cent of the rubber footwear shipped in international trade each year. From the tabulation below it will be noted that during recent years the trend of exports from each of these countries has been steadily upward, Canada, however, representing relatively the greatest advance. Although not reporting their rubber footwear shipments by pairs, certain other countries, including Germany, France, Sweden, and Austria, represent important competitors, particularly in the European trade, while Japan is a leading source of supply for the Far Eastern markets.

	United States Pairs	Canada Pairs	United Kingdom Pairs	Total Pairs
1922.....	4,083,105	[1] 1,101,894	1,793,916	6,978,915
1923.....	5,269,666	2,124,748	2,680,512	10,074,926
1924.....	6,278,898	3,058,934	3,112,908	12,450,740
1925.....	6,655,258	4,431,090	3,380,496	14,466,844

[1] Last nine months of 1922.

DIFFICULTIES OF MARKETING RUBBER GOODS IN AUSTRALIA

The American exporter, attempting to place his rubber goods in Australia, is confronted, according to *Commerce Reports*, with two main problems. One of these is represented by the growing local manufacturing industry, protected by tariff regulations that in some cases are nearly prohibitive, while favorable in certain others. The competition of the British rubber manufacturing industry constitutes the second difficulty, where the close kinship of the two peoples enters into the problem. The Australian market is an excellent one for automotive rubber products, the increase in the total value of the 1925 imports of tires, tubes, and tire repair materials having been almost 50 per cent above the value for the preceding year.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
856	Manufacturers of rubber covered rollers.
857	Dealers and manufacturers of rubber substitute.
858	Source of supply for art gum erasers.
859	Makers of gutta percha tissue.
860	Manufacturer of "Checkwear" golf tee.
861	Rubber balloon manufacturers.
862	Rubber latex concentrations from 60 to 75 per cent.
863	Rubber product more buoyant than cork.
864	English manufacturer of colors suitable for rubber.

Foreign Trade Opportunities

For further information concerning the inquiries listed below, address United States Department of Commerce, Bureau of Foreign and Domestic Commerce, Room 734, Custom House, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
21,285	Germany. Hot water bottles and rubber gloves	Purchase
21,295	West Indies. Canvas rubber-soled shoes	Agency
21,374	Austria. Typewriter and ink erasers, rubber bands, etc., for office use	Sole agency
21,411	Spain. Rubberized asbestos for automobile work	Purchase or agency
21,440	Cuba. Rubberized cloth	Agency
21,467	Brazil. Balloons and squawkers	Purchase
21,475	Japan. Gray rubber bands	Agency
21,476	Italy. Scrap rubber (floating and semi-floating inner tubes)	Purchase and agency
21,477	Sweden. Automobile and truck tires	Purchase
21,478	Madagascar. Automobile, truck, motorcycle, and bicycle tires	Purchase or agency
21,479	Madagascar. Automobile, motorcycle, and bicycle tires	Agency
21,480	Cuba. Garden hose	Agency
21,481	South Africa. Rubber floor coverings	Agency
21,569	Brazil. Surgeons' specialties, particularly elastic stockings and abdominal belts	Purchase and agency
21,570	Switzerland. Tennis balls	Purchase
21,625	Germany. Bicycle tires	Agency
21,629	Greece. Rubber heels and soles	Purchase
21,632	Austria. Zinc and rubber plates ,for printing machinery	Agency
21,634	Canada. Sheeting, nipples, pacifiers, etc.	Agency
21,635	Wales. Rubber compound, for vulcanizing automobile tires	Purchase
21,636	Iraq. Tires and tubes	Purchase
21,637	Germany. Aprons and other rubber clothing, boots and shoes, black rubberized cloth, in strong weaves	Purchase or agency
21,642	Brazil, Rubber plungers, for forcing drain pipes.	Purchase and agency
21,652	Chile. Erasers, as school supplies	Purchase
21,658	Uruguay. Rubber blankets, for newspaper printing presses	Purchase and agency
21,670	Palestine. Boots and shoes, and canvas rubber-soled sport shoes	Purchase and agency
21,714	Germany. Automobile and motor cycle tires	Agency
21,717	New Brunswick. Hospital supplies, tire repair material, fan belts for automobiles, and friction tape	Agency
21,752	Germany. Hard and flexible vulcanized fiber.	Purchase
21,753	China. Rubber-soled footwear, tennis and athletic	Agency
21,754	Egypt. Men's belts	Agency
21,786	Austria. Automobile tires	Agency

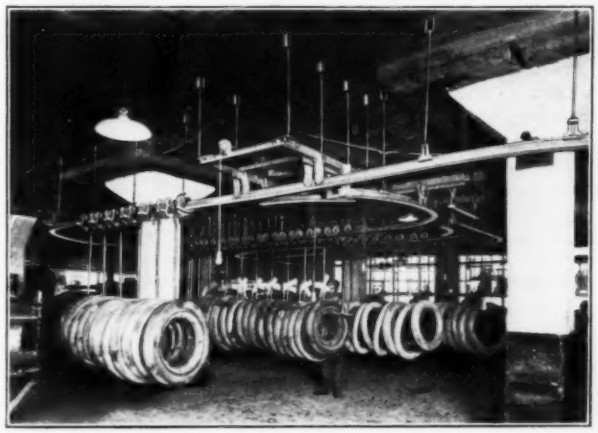
Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
*1219	"Michelin Company and the French Tire Market."
*1220	"June Imports of Rubber Tires Into the United States."
1222	"Crude Rubber Production in America and Africa."
*1227	"Canadian Tire Exports During June, 1926."
*1228	"Canadian Tire Exports Heavy During First Half of 1926."
*1231	"French Tire Exports During First Half of 1926."
*1234	"British Exports of Automobile Casings During First Six months of 1926."

Overhead Tire Track System

From the building operation to the curing room, tires require prompt and expeditious handling, yet owing to several factors peculiar to the product, they cannot be moved by the gravity conveyer method. First, they are extremely bulky and heavy, especially before the cores are removed for insertion of airbags; second, in their soft uncured state, they cannot be handled directly without irreparable damage. Overhead monorail carrier systems are employed to advantage here. Single arms with hooks carry the tires suspended from the overhead rail so that they hang free and cannot be damaged. These rail systems are very flexible as they can be equipped with branches and sidings, making segregation of sizes and classification of production an easy matter.



Cleveland Electric Tramrail System

A unit in operation is shown in the accompanying illustration of an air bag and ring track storage on a Cleveland tramrail system. Air bags and rings for each size tire are held on trains of tramrail carriers until needed. As casings come off the tire building machines, the train carrying the proper size bags is run from the storage rail to the rimming press where bags are inserted and rings fitted. The assembled unit consisting of casing, air bag and ring is then placed upon the carriers and run into the mold conveyer at the heater pit.

IMPORTANCE OF FUEL ON PLANTATIONS

The problem of obtaining fuel on plantations to use in the smoke sheds has reached a very critical point in many parts of the Far East. If a plantation has to buy its fuel for the smoke houses, the overhead charges are increased enormously. For it must be remembered that about one ton of wood is used for every 185 pounds of rubber. Newly opened estates have plenty of wood on hand but the older estates are, at present, hard put to it and have had to consider giving up the preparation of smoked sheet. So it is a difficult thing to try to forecast what changes, if any, will evolve in the factory practices of the far eastern plantations. A greater cooperation between the engineers and chemists of the manufacturers with the scientific workers connected with the producing estates will do wonders to improve the possibilities of the existing, well established practices. The American plantations of the future, if such ever will develop in the Philippines, will do well to follow the lead of the old estates in the British and Dutch East Indies in the production of standard grades; but best of all, to develop along independent lines as already the United States Rubber Plantations have so admirably done in Sumatra.

What the Rubber Chemists Are Doing

Furfural Derivatives as Rubber Accelerators[1]

By J. P. Trickey and G. J. Leuck[2]

THE steadily decreasing price of furfural is rapidly increasing its use and that of its derivatives in industrial processes. Among the derivatives are a number that have marked accelerating action on the vulcanization of rubber. The range of activity is wide, varying from the ultra-accelerator type to the type for which relatively high temperatures are necessary for the accelerating action to be manifested.

Hydrofuramide, which has been sold in France under the trade name of Vulcazol, is perhaps the best known of the accelerators derived from furfural. Dubosc[3] and Ricard[4] report a good cure in 10 to 20 minutes at 135 degrees C. using 0.5 to 1.0 per cent of hydrofuramide in a high zinc batch with 4 to 5 per cent sulphur, obtaining under these conditions a tensile of 3,000 to 3,500 pounds per square inch. Twiss[5] obtained maximum tensile of 2,000 to 2,200 pounds per square inch using a low zinc (1 to 5 per cent), 10 per cent sulphur, and 1 per cent hydrofuramide in 45 minutes at 138 degrees C. Furfurin has accelerating action very similar to that of hydrofuramide.[6]

A number of accelerators occur among the sulphur derivatives. A patent has been issued to Cadwell[6] on the use of thiofurfural as an accelerator. Bruni[7] and Romani[8] report the ultra-accelerating action of dithiofuroic acid, but give no numerical data. In addition to these covering the accelerating action of furfural derivatives, patents have been granted to Trumbull and Winklemann[9] on the use of resinous reaction products of the guanidines with furfural as age resistors, and to Winklemann and Gray[10] on the use of condensation products of furfural with *a*-naphthylamine and *o*-toluidine for the same purpose. Winkelmann[11] has also been granted a patent on the use of furfural-*o*-toluidine in the production of renewed rubber.

TABLE I. CURE AT 60 POUNDS STEAM PRESSURE (307 DEGREES F.)

Time Min.	Tensile (0.5%)	Elong. (0.5%)	Tensile (1.0%)	Elong. (1.0%)	Tensile (1.5%)	Elong. (1.5%)	Tensile (2.0%)	Elong. (2.0%)
Hydrofuramide								
15	1563	950	1552	900	1981	900	2195	850
30	1689	850	2201	900	2336	850	2558	850
45	1826	830	2222	850	2301	800	2581	800
60	2192	900	2124	850	2244	800	2261	750
75	2315	900	2033	800	.....	...	.....	...
90	2174	900	1939	800	.....	...	.....	...
105	2177	850	1801	750	.....	...	.....	...
120	1960	850	1560	750	.....	...	.....	...
Hexamethylenetetramine								
	(0.25%)		(0.5%)		(0.75%)		(1.0%)	
15	1517	900	1829	850	2209	850	2332	850
30	2044	850	2495	800	2609	800	3148	800
45	2359	850	2782	800	2646	750	2539	700
60	1564	700	599	450	663	500	482	400
Diphenylguanidine								
	(0.25%)		(0.5%)		(0.75%)		(1.0%)	
15	1929	850	2429	800	3087	750	2959	700
30	2415	800	2746	750	2916	700	2799	650
45	2558	750	2391	750	2304	650	1846	600
60	2235	750	1979	700	1756	650	1647	600

An investigation of the possibilities of furfural derivatives as accelerators has been begun in this laboratory. Early in the experimental work the accelerating action of hydrofuramide, hexa, and diphenylguanidine was compared. The formula used in these experiments, as well as in all the others reported in this paper, was 100 parts rubber (smoked sheets), 10 parts zinc oxide, and 5 parts sulphur.

Hydrofuramide was found to be roughly one-third to one-half as effective as hexa and diphenylguanidine. The over-cure effect, however, is much less with hydrofuramide than with either of the others. The effect on the color of the cured rubber is practically the same when the pieces are first cured, but on aging a brownish color is developed when hydrofuramide is used which would limit its use to dark stocks. The results obtained in cures at 60 pounds steam presure (307 degrees F.) are given in Table I and the results at 50 pounds steam pressure (298 degrees F.) in Table II.

TABLE II. CURE AT 50 POUNDS STEAM PRESSURE (298 DEGREES F.)

Time Min.	Tensile (0.5%)	Elong. (0.5%)	Tensile (1.0%)	Elong. (1.0%)	Tensile (1.5%)	Elong. (1.5%)	Tensile (2.0%)	Elong. (2.0%)
Hydrofuramide								
15	305	800	1133	850	1861	850	2219	850
30	1014	850	1653	900	2282	850	2407	850
45	1372	950	1854	850	2286	850	2546	800
60	1518	900	2225	850	2286	800	2340	750
75	1559	850	2300	850	2358	800	2457	800
90	1719	850	1950	850	2187	800	2240	800
105	1794	850	2249	800	2128	800	2140	800
120	1846	850	1930	800	2324	800	2165	800
Hexamethylenetetramine								
	(0.25%)		(0.5%)		(0.75%)		(1.0%)	
15	407	830	1197	950	1450	950	1446	900
30	1562	950	1959	900	2354	900	2543	850
45	1935	850	2412	850	2728	850	2852	800
60	2210	850	2975	850	2930	800	2853	750
75	2468	800	2953	800	2676	700	2450	650
90	2397	800	2419	750	2676	750	1225	600
105	2333	750	2131	650	734	500	535	400
120	1901	750	1651	650	608	500	435	400
Diphenylguanidine								
	(0.25%)		(0.5%)		(0.75%)		(1.0%)	
15	1418	950	2024	850	2322	800	2723	800
30	2062	850	2264	750	2875	750	2799	700
45	2311	850	2793	750	2963	700	2949	700
60	2455	800	2628	750	2705	700	2542	650
75	2368	800	2943	750	2664	700	2115	600
90	2438	800	2692	700	2425	700	2064	600
105	2188	800	2055	700	1844	700	2104	650
120	2167	800	1900	700	1655	650	1580	600

The effect of furfurin was also studied and found to be practically the same as that of hydrofuramide. A number of other furfural derivatives have been tested for accelerating action. Because of the ease with which furfural condenses with other compounds to form resinous bodies, a substantial number of the compounds studied were of this type. Among these may be mentioned the condensation products with aniline, diphenylaniline, and dimethylaniline. In general, in this limited experimentation, the products formed with aromatic compounds have a relatively small accelerating action while those with aliphatic compounds have considerably more.

A number of the thio aldehydes having the empirical formula $(C_4H_3O.CHS)_x$ have been reported in the literature. Only two have been prepared in the pure state, both of which had the formula $(C_4H_3O.CHS)_2$, but differed markedly in their properties. Others of resinous nature have been made with formulas of $(C_4H_3O.CHS)_{15-20}$. Two thio aldehydes, one liquid and the other solid, were prepared and tested by the authors. The results obtained using the two thio aldehydes as well as ethyl furylamine and furylidine ethylamine, when cured at 50 pounds steam pressure, are given in Table III. These compounds were picked from

[1] Presented before the joint meeting of the Division of Rubber Chemistry and the Akron Section of the American Chemical Society, Akron, Ohio, February 22 and 23, 1926. Courtesy of *Industrial & Engineering Chemistry*.

[2] The Miner Laboratories, Chicago, Illinois.

[3] *Le Caoutchouc & la Gutta-Percha*, 17, 10,495 (1920).

[4] United States Patent 1,440,176 (1922).

[5] *Journal Society Chemical Industry*, 40 242T (1921).

[6] United States Patents 1,564,824 and 1,564,825 (1925).

[7] *India Rubber Journal*, 64, 937 (1922).

[8] *Le Caoutchouc & la Gutta Percha*, 19, 11,626 (1922).

[9] United States Patent 1,496,792 (1924).

[10] United States Patent 1,515,642 (1924).

[11] United States Patent 1,532,218 (1925).

a number of the furfural derivatives tested as they were of non-resinous type with definite physical characteristics.

TABLE III. CURE AT 50 POUNDS STEAM PRESSURE (298 DEGREES F.)

Time Min.	1% Ethyl Furylamine Tensile	1% Ethyl Furylamine Elong.	1% Furylidine Ethylamine Tensile	1% Furylidine Ethylamine Elong.	1% Thiofurfural I (Solid) Tensile	1% Thiofurfural I (Solid) Elong.	1% Thiofurfural II (Liquid) Tensile	1% Thiofurfural II (Liquid) Elong.
15	1148	1000	1402	900	122	500	198	700
30	1864	950	2231	900	542	800	883	850
45	2218	850	2579	850	1149	900	1644	900
60	2247	800	2670	800	1190	800	1019	750

Work in this laboratory has been directed primarily to the study of sulphur derivatives, and dithiofuroic acid and its salts have been studied in some detail. These compounds are of the ultra-accelerator type, giving cures comparable with those obtained by the use of tuads. A comparison of the results obtained using dithiofuroic acid, zinc dithiofuroate, lead dithiofuroate, and tuads when cured at 5 pounds steam pressure, is shown in Table IV. The proportions of 0.8 per cent zinc and 1.0 per cent lead dithiofuroate are roughly equivalent to 0.6 per cent of the free dithiofuroic acid.

TABLE IV. CURE AT 5 POUNDS STEAM PRESSURE (227 DEGREES F.)

Time Min.	0.4 % Tensile	0.4 % Elong.	0.6 % Tensile	0.6 % E'ong.	0.8 % Tensile	0.8 % Elong.	1.0 % Tensile	1.0 % Elong.
Dithiofuroic Acid								
10	....	...	1489	900	2916	900	3817	850
20	2680	900	4198	850	4313	850	4374	850
30	3362	850	4329	850	4332	850	4510	850
40	3592	850	4341	850	4454	850	4411	800
50	3562	850	4012	800	4190	850	4466	800
60	3679	850	4185	800	4217	800	4435	800
90	3669	850	4062	800	4203	800	4345	800
120	3557	850	4020	800	4081	800	4248	800
Zinc Dithiofuroate								
	0.4 %		0.6 %		0.8 %		1.0 %	
7	1907	950	2574	830	2722	850	3170	825
15	3266	860	4114	860	4076	800	4180	813
22	3932	860	4317	820	4219	783	3334	700
30	3900	850	3985	800	4138	750	3566	700
45	3900	810	3795	810	4084	753	3297	683
60	3420	830	3695	765	2847	715	2766	650
90	3406	820	3537	760	2812	680	3070	693
120	3170	830	2488	730	2166	650	814	500
Lead Dithiofuroate								
							1.0 %	
15	....	...	....	...	....	...	4185	815
30	....	...	....	...	....	...	4289	789
45	....	...	....	...	....	...	4248	745
60	....	...	....	...	....	...	4037	735
Tuads								
	0.4 %		0.6 %		0.8 %		1.0 %	
10	....	...	3034	820	3217	810	3073	840
15	2825	847	4481	812	4792	797	4740	780
22	3511	840	4673	745	4562	760	4639	783
30	4373	790	4274	695	4187	720	4551	725
45	4275	765	3750	643	3386	643	3980	670
60	3868	695	2929	573	3454	615	3323	623

The effect of temperature on the accelerating action of dithiofuroic acid is shown in Table V.

The isolation of pure compounds of dithiofuroic acid is extremely difficult, so that we cannot be certain of having worked with chemically pure compounds in these experiments with the thio derivatives of furfural. In fact, the data relative to the physical properties of pure dithiofuroic acid found in the literature are very meager and it is extremely doubtful that pure dithiofuroic acid or its salts have been prepared by any of the workers who have thus far reported the preparation of these compounds.

As can be readily seen, very few of the possible furfural derivatives likely to have accelerating action have been studied. It is highly probable that there are a large number of such compounds with varying degrees of accelerating activity. Since furfural is rapidly reaching a position among the cheap raw materials for organic synthesis, it is hoped that ultimately many accelerators will be prepared from it. At the present time hydrofuramide can be produced at a price one-fourth to one-third the price of accelerators of the same general type, while dithiofuroic acid can be produced for substantially less than the price at which ultra-accelerators are now listed. The writers will endeavor to produce and study many of these derivatives, but the field is so extensive and so full of interesting possibilities that undoubtedly it will attract many workers in the near future.

TABLE V. EFFECT OF TEMPERATURE ON CURE—DITHIOFUROIC ACID

(Averages of several runs)

Time Min.	5 Lbs. Steam (227° F.) Tensile	5 Lbs. Steam (227° F.) Elong.	10 Lbs. Steam (239° F.) Tensile	10 Lbs. Steam (239° F.) Elong.	20 Lbs. Steam (258° F.) Tensile	20 Lbs. Steam (258° F.) Elong.
0.4 Per Cent						
5	....	...	....	...	1885	950
7	....	...	1311	900	....	...
10	....	...	2358	875	2593	925
20	2680	900	3500	875	2534	925
30	3362	850	3333	850	2351	925
40	3592	850	....	...	....	...
45	....	...	3332	850	2370	...
50	3562	850	....	...	....	...
60	3679	850	3267	850	2241	900
90	3669	850	3151	850	2071	900
120	3557	850	2890	850	1936	900
0.6 Per Cent						
5	....	...	1669	850	2956	875
7	....	...	2873	850	....	...
10	1489	900	4083	850	3607	875
20	4198	850	4169	850	3389	875
30	4329	850	4061	825	3168	875
40	4341	850	....	...	....	...
45	....	...	4009	825	3136	875
50	4012	800	....	...	....	...
60	4185	800	3936	825	2992	850
90	4062	800	3905	825	2805	850
120	4020	800	3740	825	2746	825
0.8 Per Cent						
5	....	...	3578	900	3488	850
7	....	...	3743	850	....	...
10	2916	900	4337	825	3876	850
20	4313	850	4453	825	3532	850
30	4332	850	4198	825	3465	850
40	4454	850	....	...	....	...
45	....	...	4093	825	3287	825
50	4190	850	....	...	....	...
60	4217	800	4000	825	3171	825
90	4203	800	3945	825	3123	825
120	4081	800	3661	800	2903	825
1.0 Per Cent						
5	....	...	4144	850	3886	800
7	....	...	4404	800	....	...
10	3817	850	4626	800	3871	800
20	4374	850	4568	800	3905	800
30	4510	850	4283	800	3766	800
40	4411	800	....	...	....	...
45	....	...	4151	775	....	...
50	4466	800	....	...	....	...
60	4435	800	4131	775	3422	775
90	4345	800	4012	750	3349	775
120	4248	800	3809	725	3058	750

MONEX APPLICATIONS AND TESTS

The use of Monex, otherwise tetra-methyl-thiuram-monosulphide, as an accelerator of vulcanization is particularly advantageous due to its curing efficiency at low temperatures, its low cost and ease of handling. It is available in the cure of tires in which the slower accelerators are used and is effective in high reclaim stocks as well as in those free of reclaim.

A test stock consisting of rubber 100; zinc oxide 5; sulphur 3; monex 1 when cured in a mold at 5 and 10 pounds of steam gave tensile strengths ranging from 3,955 pounds to 4,305 pounds; elongation from 770 to 830 per cent according to the time of cure.

PRESERVING PRODUCTS WITH LATEX

Two Dutch inventors, Vas Dias and van Wynbergen, have applied for a patent on a method of preserving various products by the use of latex. Articles, surfaces, even foodstuffs, are first coated with a thin layer of grease or film of cellophane and then a thin layer of latex is applied. The intermediate layer is needed particularly in metals and articles of food where it serves to make the latex adhere more firmly and at the same time to prevent stickiness on copper articles and decomposition in foods. If the object cannot be coated with latex after being covered with grease, it is powdered with lime, magnesia, etc., and then the latex is applied. This latter method is useful for preserving cheese, for instance.

A. C. S. Rubber Division Meeting and Symposium

THE Seventy-Second General Meeting of the American Chemical Society will be held in Philadelphia, Pennsylvania, September 6 to 11 inclusive.

The Registration Bureau will be open at 10:00 a. m., Monday, September 6, in the Bellevue-Stratford Hotel, Broad and Walnut streets, where registration and information service will continue throughout the week. Tuesday, September 7, registration and information service will also be conducted at the University gymnasium, 33rd and Spruce streets, West Philadelphia.

The Rubber Division will hold its business meeting and election of officers, Tuesday afternoon, September 7, at the University of Pennsylvania, after which the following program will be presented: "The Structure of Rubber" by Ernst A. Hauser; "Organic Polysulphides as Accelerators of Vulcanization" by Marion C. Reed and Cecil E. Boord; "Rubber Lining for Acid Leaching Tanks" by Harlan A. Depew; "Accelerators" by W. J. S. Naunton; "Some Methods of Studying Cord Tire Fabric" by F. W. Stavely and N. A. Shepard.

On the forenoons and afternoons of Thursday and Friday, September 9 and 10, the Rubber Division will hold a symposium on crude rubber. The program of papers and brief biographical notes of the speakers are here given.

"The Importance of Rubber in Modern Civilization," by Dr. Edwin E. Slosson, Director of Science Service, Washington, D. C.

Dr. Slosson is a native of Albany, Kansas, graduate of the University of Kansas and received his Ph. D., at Chicago University in 1902. After a year at the University of Wyoming as professor of chemistry he was literary editor of "The Independent" New York (1903-1920) and Associate in the School of Journalism at Columbia University (1912-1921). In 1921 he became Director of Science Service, Washington, D. C., which position he continues to fill. He is the author of a number of valuable books on educational and scientific subjects among which his "Creative Chemistry" is notable for its absorbing interest.

"The Wild and Plantation Rubber Production of Africa and Tropical America," by H. N. Whitford, Ph. D., Rubber Association of America, New York, N. Y.

Dr. Whitford is a native of Manhattan, Kansas. He received his first degree in 1890 at the Kansas State Agricultural College. The same year he went to the University of Chicago to assist in botany, and in 1903 took his Ph. D. degree there. From 1904 to 1911 he was forester and chief of the Division of Investigation, Bureau of Forestry. In these years his investigations included rubber growing possibilities in the Philippines, the Federated Malay States, Borneo and India. From 1912 to 1915 he served as forester to the Commissioner of Conservation of the Dominion of Canada. In 1915 he became a member of the faculty of the Forest School of Yale University, later serving as the chief of the Crude Rubber Section, Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C.

"Botanical and Chemical Development in the Plantation Industry." By J. W. Bicknell, vice-president, treasurer and secretary of the United States Ruber Plantations, Inc., New York, N. Y.

Mr. Bicknell has been connected with the United States Rubber Co. for sixteen years, ten of which were spent on the company's plantations in Sumatra and Malaya.

"Research on Raw Rubber at the Netherlands Government Institute at Delft." By Dr. A. van Rossem, Director of the Institute, Delft, Holland.

Dr. van Rossem is well known for his researches on latex and crude rubber conducted at the government laboratories in Delft. The results of his investigations are widely valued by planters, chemists and users of crude rubber throughout the world.

"Recent Developments in the Preparation of Plantation Rubber." By Dr. Henry P. Stevens, consultant of the British Rubber Growers' Association, London, England.

Dr. Stevens is an expert on the chemistry of rubber latex and the preparation of plantation rubber. His published work is voluminous and includes investigations of all phases of the production of rubber, such as the causes of variability, methods of coagulation, coagulants, mold prevention and methods of testing rubber.

"The Botany of Guayule Rubber." By Dr. W. B. McCallum, botanist, Intercontinental Rubber Co., Salinas, California.

Dr. McCallum is a distinguished botanist who has specialized in the propagation and improvement of the guayule shrub, with the view of its cultivation as a field crop of permanent agricultural and commercial value.

"The Production of Guayule Rubber." By G. H. Carnahan, president, Intercontinental Rubber Co., New York, N. Y.

G. H. Carnahan is prominent in the successful development of the resources of guayule rubber. As head of the Intercontinental company he has gained international prominence by his comprehensive methods for the cultivation, harvesting and improvement of guayule as a crude rubber source.

"The Chemistry of Guayule Rubber." By Dr. David Spence, vice-president, Intercontinental Rubber Co., New York, N. Y.

Dr. Spence is a native of Scotland. He was educated in Aberdeen; graduated from the Royal Technical College of Glasgow in 1902 and from Jena University in 1904. He came to the United States from the University of Liverpool to develop research laboratories for the Diamond Rubber Co. at Akron, Ohio. He continued in this position after the company merged with The B. F. Goodrich Co., and in 1914 became vice-president and general superintendent of the Norwalk Tire & Rubber Co.

"Developments on the Dutch Rubber Plantations." By Dr. Otto de Vries, Director of Research, Dutch Rubber Plantations, Delft, Holland.

Dr. de Vries is prominent among the eminent botanists and chemists who developed the plantation rubber industry. He founded in 1915 and for several years was director of the Central Rubber Station, Buitenzorg, Java. Research under his management led to practical methods of control, valuation and test, making possible the production of uniform standard plantation grades. Dr. de Vries is the author of a comprehensive treatise on plantation rubber entitled, "Estate Rubber, Its Preparation, Properties and Testing."

"The Present Status and Future Prospects of Synthetic Rubber." By Dr. William C. Geer, vice-president, The B. F. Goodrich Co., Akron, Ohio.

Dr. Geer was born in Ogdensburg, N. Y., and graduated from Cornell University in 1902, receiving there the degree of Ph. D. three years later. For a few years he served as instructor in chemistry and as an expert on wood distillation in the United States Forestry Service. In 1907 he became associated with The B. F. Goodrich Co. as chief chemist, and was advanced to manager of the development department in 1912, and four years later became director of development of goods and processes.

"The Direct Use of Rubber Latex, With Special Reference to Vulcanized Latex." By Dr. Philip Schidrowitz, consultant, London, England.

Dr. Schidrowitz was born in the city of London, educated at London University, and afterwards went to Zurich, Switzerland, graduating at the Federal Polytechnical Institute there. A year later he received his doctorate at Berne. In 1895 he established his own laboratory in London and has done much work in connection with telephone cables and general rubber research. He is an

Speakers at the Crude Rubber Symposium

P. Schidrowitz

H. P. Stevens

A. van Rossem

E. A. Hauser

W. C. Geer

J. W. Bicknell

W. B. Wiegand

E. B. Spear

R. P. Dinsmore

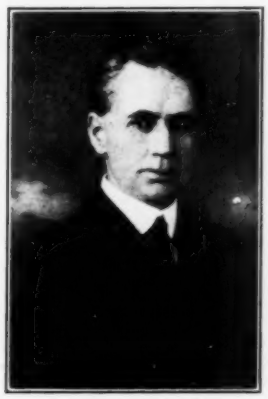
G. H. Carnahan

H. A. Winkelmann

G. L. Clark

E. E. Slosson

D. Spence



H. N. Whitford

G. S. Whitby

Harris & Ewing

O. de Vries

authority on the technology of rubber latex and its industrial applications.

"The Dissection of the Latex Globule Recorded by Micro-Motion Pictures." By Dr. Ernst A. Hauser, Metallbank, Frankfort, Germany.

Dr. Hauser, formerly of Vienna, became prominent in the rubber scientific world when he published the account of his unique investigations on the structure of the rubber latex globule. This masterly piece of work involved an original and delicate technique for puncturing the individual rubber globule while observing the process microscopically.

"X-Ray Contributions to the Analysis of the Structure of Rubber." By Professor George L. Clark, Ph. D., Massachusetts Institute of Technology, Cambridge, Massachusetts.

Dr. Clark is a native of Indiana and graduate of the Universities of De Pauw and Chicago. Following his connection as lieutenant in the Chemical Warfare Service in 1918, he has been professor of chemistry in Vanderbilt University (1919-1921), National Research Fellow, Harvard University (1922-1924). He is now professor of applied research and director of X-ray research in the Research Laboratory of the Massachusetts Institute of Technology.

"The Testing of Raw Rubber." By Professor G. Stafford Whitby, Ph. D., McGill University, Montreal, Canada.

Dr. Whitby is a native of Hull, England, graduated associate of the Royal College of Science, London, 1906, and took advanced degrees at the University of London, 1907, and his doctor's degree at McGill University, Montreal. He was demonstrator for four years at the Imperial College of Science and Technology, London, and since 1917 has been associate professor of chemistry at McGill University. From 1910-1917 he spent in the Far East as chemist to the Société Financière des Caoutchouc, a large group of plantation companies operating in Malaya, Sumatra and Java. In plantation work he introduced a number of procedures for handling latex and the preparation of raw rubber which have been widely adopted on rubber estates. In 1920 he published "Plantation Rubber and the Testing of Rubber," which is a classic in its field.

"Alternative Materials for Rubber." By Ellwell B. Spear, Ph. D., chief chemist, Thermatomic Carbon Co., Pittsburgh, Pennsylvania.

Dr. Spear is a naturalized citizen of the United States, from Ontario, Canada. After graduation at the University of Manitoba, he pursued post-graduate courses in the Universities of Toronto and Leipsic and Heidelberg, Germany, where he took his degree in 1907. From 1907 to 1920 he was on the teaching staff of the Massachusetts Institute of Technology and was associate professor when he resigned to become manager of the Research Department of the Goodyear Tire and Rubber Co. From 1922 to date he has been chief chemist of the Thermatomic Carbon Co., Pittsburgh, Pennsylvania.

"On Optimum Cure Criteria of Vulcanized Rubber." By William B. Wiegand, M. Sc., Binney & Smith, New York, N. Y.

Mr. Wiegand was born in Ontario and was educated in the schools of Toronto, graduating from Toronto University in 1912. For a number of years, as general technical superintendent, he was responsible for the manufacturing and technical problems relating to tires, footwear and mechanical rubber goods in the leading rubber companies in Canada. He is the author of a number of important technical papers relating to the physical properties of rubber. In 1925, he lectured in London before the Institution of Rubber Industry, and was elected a Fellow of the Institution. Since 1924 he has been identified with the study of improved methods of rubber compounding, and the effect of special reinforcing ingredients on the physical properties of cured rubber.

"The Composition and Structure of Rubber." By R. P. Dinsmore, chief chemist, the Goodyear Tire & Rubber Co., Akron, Ohio.

Mr. Dinsmore, B. S., a native of Massachusetts, graduated in 1914 from the Massachusetts Institute of Technology. Since then he has been continuously employed in the Goodyear plants at Toronto, Los Angeles and Akron in the capacities of chief compounder and chief chemist, and at present directs the chemical and research work of all the factories of the Goodyear plants.

"The Present and Future Status of Reclaimed Rubber." By Dr. H. A. Winkelmann, Philadelphia Rubber Works, Akron, Ohio.

Dr. Winkelmann, a native of Minnesota, was educated at Northwestern College and the University of Illinois, graduating from the latter in 1915, where he received his doctorate in 1919. From 1917 to 1919 he directed the chemical laboratory at the Lakehurst Proving Ground, with rank as Captain, C. W. S. From 1919 until recently in the present year, he was research chemist and technical superintendent of the tire division of The B. F. Goodrich Co., engaged in the study of accelerators, anti-oxidants, compounding, fabric development, etc. He is now chief chemist of the Philadelphia Rubber Works Co., Akron, Ohio.

"Synthetic Rubber." By Dr. C. C. Burgdorf of Germany.

The Banquet

The banquet will be held Thursday evening, September 9, in the Crystal Ballroom, Benjamin Franklin Hotel, Philadelphia, Pennsylvania. President J. C. Weston, of the Rubber Association of America, will be toastmaster. The principal subject at the banquet will be "The Relation of Research to Industry." The speaker of the evening will be C. F. Kettering, vice-president of the General Motors Corporation.

The following well-known executives have consented to make five-minute talks on what research has done for their products:

C. B. Seger, president, United States Rubber Co.; P. W. Litchfield, president, Goodyear Tire & Rubber Co.; H. S. Firestone, president, Firestone Tire & Rubber Co.; J. D. Tew, works manager, The B. F. Goodrich Co.; Everett Morss, president, Simplex Wire & Cable Co., and Dr. J. F. Norris, president, American Chemical Society.

Banquet tickets at $5.00 each may be obtained from Dr. A. A. Somerville, R. T. Vanderbilt Co., 50 East 42nd street, New York, N. Y.

Chemical Patents

The United States

1,592,820. TREATMENT OF RUBBER WITH ALIPHATIC DIAMINES, AND THEIR DERIVATIONS AND PRODUCTS OBTAINED THEREBY. This comprises subjecting rubber to the reaction product of ethylene diamine and an oxen chain aldehyde, and vulcanizing the rubber.—Sidney M. Cadwell, Leonia, New Jersey, assignor to The Naugatuck Chemical Co., Naugatuck, Connecticut.

1,592,853. METHOD FOR CONTROLLING THE ADHESION OF RUBBER. Zinc stearate is applied to the surface of the rubber to prevent its adhesion at normal temperatures. It is substantially soluble in rubber at vulcanizing temperatures and leaves the surface of the rubber practically free of the coating agent after vulcanization.—Harry A. Hoffman and John B. Dickson, Akron, Ohio, assignors to The B. F. Goodrich Co., New York, N. Y.

The Dominion of Canada

262,517. RUBBER SUBSTITUTE. A plastic body produced by exposing magnesium chloride to the atmosphere until the moisture absorbed forms a solution, which is poured over undissolved magnesium chloride to concentrate it. An equal weight of starch is then added and the resulting mixture cast in a mold.—Charles Burkill, London S. E. 15, England.

262,587. METHOD OF UNITING RUBBER AND METAL. The process consists in treating the surface of the metal with powdered charcoal, placing vulcanizable rubber against the treated surface and subjecting the combination to vulcanizing temperature.—Robert M. Withycombe, Sidney, New South Wales.

The United Kingdom

251,271. ELECTROLYSIS. Electro-deposition of rubber is effected on a surface prepared by dipping, coating or spraying with a layer of electrically conducting material. This surface serves as an anode in an aqueous emulsion or other suitable dispersion of rubber.—Kodak, Ltd., Kodak House, Kingsway, London, assignee of S. E. Sheppard and C. L. Beal, Kodak Park, Rochester, New York, U. S. A.

251,303.* SOLUTIONS OF ORGANIC SUBSTANCES. Solutions of caoutchouc and other organic substances are formed with the aid of mono-aryl ethers of glycols or the esters of organic acids, including carbonic acid, with mono-alkyl or aryl ethers of ethylene glycol or its homologs.—I. G. Farbenindustrie Akt. Ges. Frankfort-on-Main, Germany.

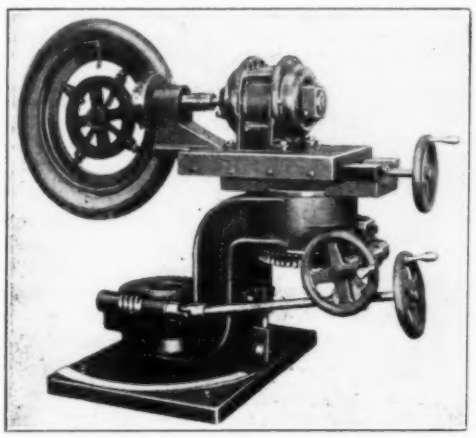
* Not yet accepted.

New Machines and Appliances

Airbag Buffing Machine

PERIODIC removal of the hardened exterior of airbags is necessary to maintain their serviceability. The newest and one of the most effective machines for this purpose is the specially designed machine here pictured.

The circumference of the buffing wheel is studded with tool steel pins so arranged and distributed that the cutting action is very clean and rapid. These pins are held in a separate housing inside the buffer wheel which may be removed for the insertion of new pins. The new machine is easily adjustable to the work as its



Akron Standard Airbag Buffer

entire carriage may be swung 180 degrees and the buffer carriage itself 360 degrees. The driving motor is connected directly to the buffer and operates through a flexible coupling on the shaft. The motor may be reversed to drive the buffer in either direction. This permits buffing the bag on both sides with the necessary downward stroke without removing the bag.

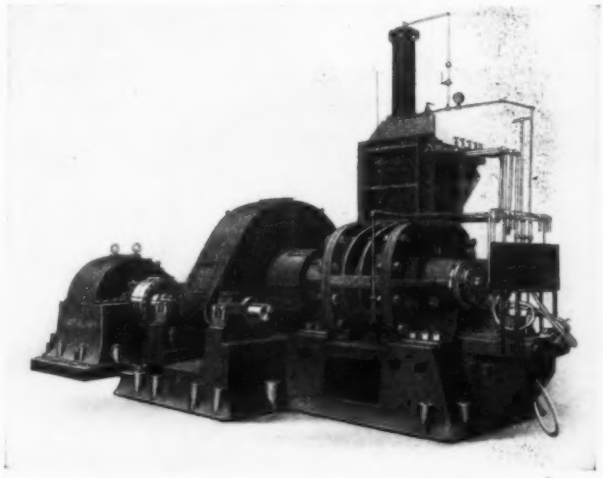
In operation the bag is on a regular bag curing ring and mounted on a hand tire building stand. The picture shows the bag in position for buffing without its supporting stand. The buffer makes a smooth uniform swath as it cuts and its action is very rapid.—The Akron Standard Mold Co., Akron, Ohio.

Banbury Stock Warmer

The Banbury enclosed rubber mixer is well known in the industry at home and abroad as a most efficient mixer for volume output. It is built in a number of models to meet the demand for varying tonnages of stock.

The new model 10-W here illustrated is specially designed for warming up cold and aged mixed stock preparatory to feeding it to calenders or tubing machines and has the requisite rigidity, strength and weight for this severe duty. It is usually installed with batch-out rolls underneath to synchronize with calender or tubing machine. The stock may also be slit into ribbons as it comes from the rolls under the warmer for continuous feed to several tubers.

The power saving of this warmer amounts to about half of the horse power and two thirds of the labor usually necessary for warming cold stock. Then there are economies due to smaller floor space and more efficient handling of materials. Quite as important as the savings of horse power and labor is the absolute uniformity of the stock the machine produces, insuring material of accurate gage and eliminating much waste. The actual average horse power consumed is between 150 and 180. On high grade



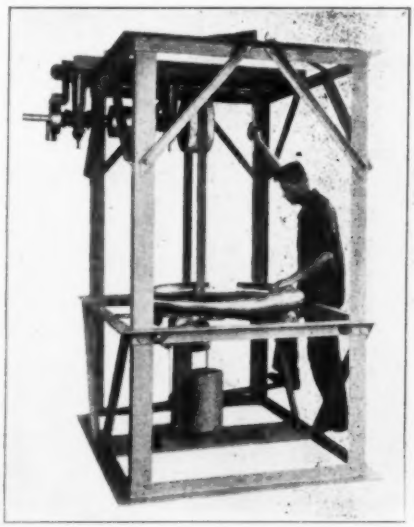
Model 10-W Banbury Mixer and Warmer

tread stocks the 10-W machines warm up about 7,000 pounds per hour ready for further processing.—Birmingham Iron Foundry, Derby, Connecticut.

Machine for Polishing Circular Mandrels

The necessity of polishing inner tube mandrels to keep them in perfect working condition presents something of a problem in any large tire factory, particularly with regard to curved mandrels. Straight mandrels can, of course, be polished on lathe centers, but flat and spiral curved mandrels require special handling.

The simple and effective machine here shown consists of an angle iron frame supporting an overhead counter shaft. At a convenient working level below, a series of grooved idlers serve to support the mandrel and allow it to be moved at will under the polishing belt. This is driven by an overhead pulley, and passes around idlers on each side of the pedestal forming a loop over the top of the mandrel. The tension of the polish-

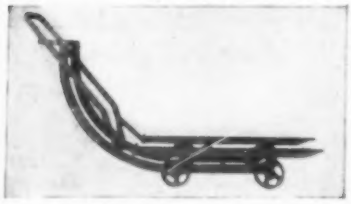


Lowe Curved Mandrel Polisher

ing belt is regulated by the pull of a weight on the idler yoke and is controlled by a foot treadle. The machine is started and stopped by an overhead belt shipper. A single operator can speedily polish to its original finish any curved mandrel whether of flat or spiral form.—The Clyde E. Lowe Co., 2976 East 81st. street, Cleveland, Ohio.

Factory Lift Truck

A very simple and sturdy lift truck for general factory use is here pictured. It is designed for medium weight handling and will take care of a variety of loads up to 2,000 pounds.



Arcade Lift Truck

Loads can be lifted by the operator in upright position and one steady pull, using the weight of the body, easily lifts the load. When raised it cannot slip or lower itself due to the positive gravity lock. Lowering the load is controlled by an hydraulic release check which lowers the load without any jar or strain, thus protecting both the load and the life of the truck.—Arcade Manufacturing Co., Freeport, Illinois.

Automatic Container Sealing Machines

Solid fiber and corrugated shipping boxes have largely displaced nailed wooden cases for shipping rubber goods. The economy and other advantages of the new containers largely depend on the use of automatic sealing machines which operate in pairs placed tandem.

The machine shown at the right of the illustration receives the unsealed packed case which is delivered sealed for shipment from the machine at the left in the picture.

These machines apply adhesive to the flaps of the shipping cases, both top and bottom, in a thin even coating on only that portion of the outer flaps which comes in contact with the inner flaps, and then apply constant yielding pressure on the flaps until adhesion takes place.

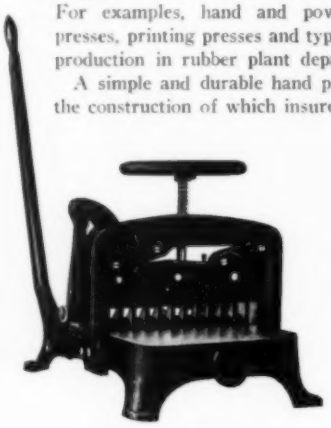
The cases to be sealed are packed with the bottom flaps folded as when sealed. Riding on these flaps they are brought by conveyer to the front end of the machine which they enter singly controlled by a positive timing device. As a case enters it is picked up by a transverse bar which causes it to move forward. During its progress the top and bottom outer flaps are folded outward into a horizontal position and are coated with a thin uniform film of adhesive. Both top and bottom flaps are then folded back in place and the case enters the second or sealing units passing through on a belt which is narrower than the case to insure pressure on the bottom flaps. Adjustable guides bring lateral pressure against the top and bottom making a close abutment seam in the center of the case just before the vertical pressure is applied above by a series of spring pressure rollers.

The passage of a case for sealing is regulated by contact with an automatic start and stop switch. The pressure unit serves also as a semi-automatic sealer when fed by hand with cases the flaps of which have been hand-coated with adhesive.—Standard Sealing Equipment Corporation, Long Island City, New York.

Hand Power Rubber Cutter

The great variety of machinery and equipment designed primarily for very different lines of industry offers a field for selection in which the rubber manufacturer can find many tools that are adapted directly or indirectly for his special factory needs. For examples, hand and power paper cutters, tableting presses, printing presses and types may all be found in useful production in rubber plant departments.

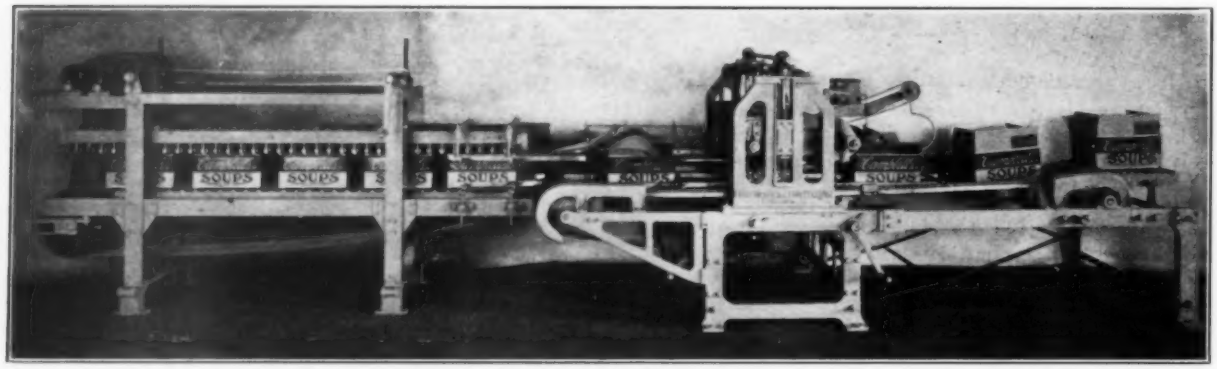
A simple and durable hand power cutter is here pictured, the construction of which insures the highest efficiency as to wear and accuracy of operation. Its well-balanced design fits it for cutting such stock as cured rubber tiling, strips, samples, etc. Where greater output is required larger sizes of the same type of machine may be used. These would be specially powerful, rigid and accurate power machines.—Golding Press Division, American Type Founders Co., Franklin, Massachusetts.



Pearl Stock Cutter

Interval Timer

A simple and dependable special alarm clock designed as an interval timer is practically indispensable to every pressman as a reminder that his cures are done without burdening him to watch the general time clock in the room. The timer may be set in any convenient location and placed by the operator to ring at intervals varying from 15 seconds to 2 hours.—Victor X-Ray Corporation, 131 East 23rd street, New York, N. Y.



Standard Automatic Carton Sealing Machine

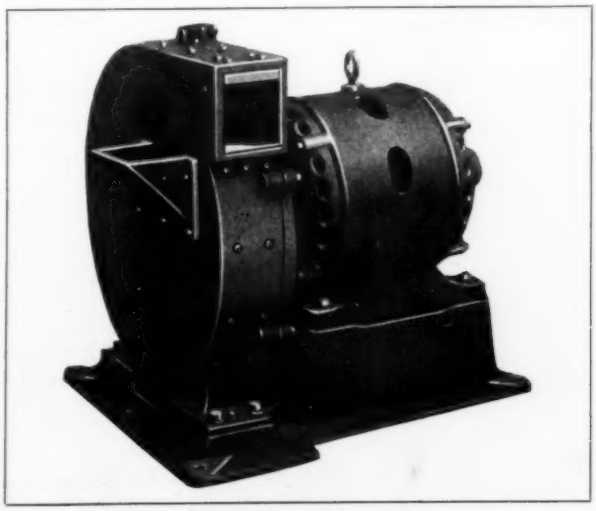
Electric Factory Truck

Trucks are inevitable in most factories, and in rubber plants where stock in process is in steady movement, a means of motive power such as shown in the electric industrial truck here pictured is decidedly convenient. As is indicated this truck is amply powered to handle heavy loads such as bales of rubber, scrap, compound batches, etc. The boxes used with this truck for conveying crude rubber to the masticators are heavy galvanized iron, 3 feet long, by 2 feet wide and 2 feet high, and will contain about 250 pounds of rubber each. For moving compounded rubber the boxes are 2½ feet, by 2 feet by 2 feet to contain 100 pounds each.—Ernest F. Learned, 141 Milk street, Boston 9, Massachusetts.

Yale Electric Industrial Truck

Mineral Rubber Impact Pulverizer

A new impact pulverizer for reducing mineral rubber to dust for convenience in weighing and mixing is here pictured. It is simple in construction without couplings or bearings. It has practically but 3 parts, a rubber lined circular chamber with side hopper feed opening and tangential top discharge, containing a rubber covered impact 5 blade paddle direct connected to a motor.



Patterson M R Dust Mill

The chamber lining and paddle facings wear 10 times as long as tool steel because the soft resilient rubber does not abrade rapidly.

When renewal of the rubber becomes necessary it can be done at a fraction of the cost of steel blades and liners. The motor and mill are mounted directly on a base. By loosening 4 bolts the barrel or chamber section can be removed, giving access to all working parts. There is a saving of one third in power and 90 per cent in maintenance available by the use of this mill for producing M R dust.—The Patterson Foundry & Machine Co., East Liverpool, Ohio.

Pneumatic Tire Inspector

It is practically impossible to spread open by hand certain tire casings for inspection, especially large sizes with heavy side walls. This work is rendered simple and easy, however, by the use of the machine here illustrated.

Manley Tire Inspector

In operation, the tire casing is set on rollers of the machine, the grab hooks are placed in position over the tire beads, the air valve is then opened and the pneumatic plunger rises against the tread forcing the inside of the tire upward while the hook arms pull the side walls outward and downward so that the inside of the tire is completely exposed. The machine is entirely automatic and no manual effort is required to operate it.

For exterior inspection the tire rests on the rollers and is revolved by hand. In the head of the machine an electric light socket is located to illuminate the tire. The machine is compact, portable and convenient for exposing damages and defects on tires of all sizes.—The Manley Manufacturing Co., York, Pennsylvania.

Process Patents

The United States

1,592,445 Crêpe rubber shoe soles. David A. Cutler, Wollaston, assignor to Alfred Hale Rubber Co., Atlantic, both of Massachusetts.

1,592,826 Hinged connection for hand baggage. Edward J. Godfrey, Naugatuck, Connecticut, assignor to The Goodyear's Metallic Rubber Shoe Co., a corporation of Connecticut.

1,592,948 Garter. David Levigton, New York, N. Y.

1,593,211 Covering tennis balls. Frank J. Faulkner and Charles B. Whitney, Springfield, assignors to A. G. Spalding Brothers, Chicopee, both in Massachusetts.

1,593,439 Braille transcription process. Nancy D'Wolf Clark, Glen Head, and Alma B. Armstrong, New York, N. Y., assignors to The American National Red Cross.

1,593,703 Colored balloon. Harold R. and George F. Morr, both of Ashland, Ohio.

1,594,382 Treating vulcanized rubber having roughened surface. Jacob W. Reck, assignor to The American Rubber & Tire Co., both of Akron, Ohio.

1,594,997 Manufacturing sound amplifying horns. George W. Bulley, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,595,006 Hollow rubber articles. James Lyman Kelly and Charles Fred Fenlason, Jr., Malone, New York.

The Dominion of Canada

262,494 Cushion tire. Fred R. Klaus and Frank H. Meyer, both of Warren, Ohio, U. S. A.

262,580 Manufacturing pneumatic tire. Giuseppe Venosta, Milan, Italy.

263,010 Applying goldbeaters' skin to fabric. The Goodyear Tire & Rubber Co., assignee of James F. Cooper, both of Akron, Ohio, U. S. A.

The United Kingdom

251,431 Compound fabrics. S. Cohen, 543 Crown street, and S. Kilberg, 621 Crown street, both in Brooklyn, New York, U. S. A.

251,436 Cricket balls. G. W. Beldam, Boston Lodge, Ealing, London, and Game Balls Co., Ltd., Windmill Road, Brentford, Middlesex.

252,015* Wheel tires. A. Valentini, 31 Corso Magenta, Milan, Italy.

252,457 Manufacturing artificial teeth. D. M. Shaw, 18, Avondale Road, Nottingham, London.

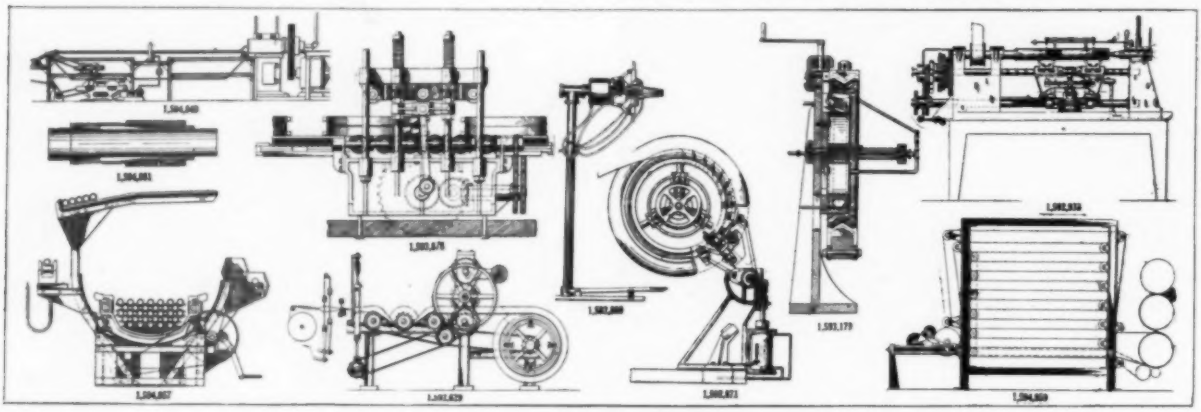
* Not yet accepted.

Machinery Patents

The United States

1,592,629. TIRE MAKING MACHINE. This is adapted to produce a band of rubber impregnated cords brought under equal tension by passage through a series of convex dolly rolls and delivering them as a convex-concave band onto a tire making core.—Arthur M. Elliott, Deerfield, Ohio.

1,592,809. APPARATUS FOR FORMING CUFFS ON INNER TUBES. This air-operated machine reverses the end of an inner tube upon itself as a cuff, either single or double, preliminary to the process of cementing and curing the tube into endless form. The end of the tube to be cuffed is placed over a set of flat tubular perforated expanding fingers. These are actuated by an air piston and stretch the tube allowing it to turn back upon itself as a cuff resting upon a short split sleeve as a support.—Horace D. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.



1,592,871. BEAD STITCHER AND TRIMMER FOR TIRE BUILDING MACHINES. This device is designed to roll and compact about the bead the plies of fabric which are drawn onto the tire-building core after the bead has been applied to the underlying plies of the partly built tire, and to trim the fabric at the toe of the bead. A set of bead stitching disks and automatic cutting disk, one for each side of the tire, are mounted in a tool support and are brought into operating contact with the tire bead by rack and pinion connection with an air pressure cylinder.—Merle C. Scrote, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,592,933. RUBBER JAR RING CUTTING MACHINE. This machine is entirely automatic in operation cutting accurately and rapidly. The cutting knives are automatically stopped when the end of the rubber tube is reached and an automobile return feed mechanism returns the knives to the starting position. The knives and the speed of machine are both adjustable to the particular thickness of the tube being cut.—Guy L. Hammond and William Nicholas, assignors to The Black Rock Manufacturing Co., all of Bridgeport, Connecticut.

1,593,179. VULCANIZER. This apparatus is for vulcanizing endless flaps for tires, and comprises a drum provided with a circumferential trough the shape of the inner surface of the flap to be cured. About the drum is arranged an expansible jacket with a rib corresponding in shape to the outside of the flap. A second circumferential jacket engages with the inner periphery of the drum provided with air bags which exert pressure upon the material being cured. In operation the drum is slid out upon its central support, the flap adjusted and the drum slid back. The sections are set together by the hand crank, and curing proceeds under inflation pressure and steam pressure in the air bags.—Otto J. Kuhlke, assignor to The Kuhlke Machine Co., both of Akron, Ohio.

1,593,878. MOLD PRESS. This power press is operated in connection with a tire mold conveyer to close it correctly upon an uncured tire on its way to the vulcanizer. This preliminary closing on cord tires having air bags within is of special advantage in that use of separate bead molding rings may be dispensed with and the tire molds be formed with integral bead molding portions which has formerly been impractical. The molds between the press members are so driven that mold engaging devices on the conveyer are relieved of strains due to the pressure of the molds in the press.—Charles H. Nagel Barberton, assignor to The Firestone Tire & Rubber Co., Akron, both in Ohio.

1,594,845. METHOD AND APPARATUS FOR TREATING RUBBER. This device consists of two conveyer belts, the first receiving the material, as a tire tread, from the die of a tubing machine. Its upper run passes over a weighing scale electrically connected with a motor which drives both conveyers through two variable speed transmissions. Speeding the first conveyer stretches and lightens the run of stock and slackening the second conveyer compresses or thickens the stock as it descends over a series of rollers from the first to the second conveyer.—Carmon A. Myers, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,594,857. APPARATUS FOR UNWRAPPING INNER TUBES. In this device the tubes are received from the heaters in a cradle car. The unwrappers remove the mandrels, placing them singly in supporting rollers and inserting the end of the pulled off wrapper between a drive roller and the tube pole. The wrapper is quickly unwound from the tube by the drive roll. After the wrapper is removed the poles are placed on the inclined rails over the cradle for storage until the tubes are stripped from them by the air in the usual way.—Thomas J. Smith, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,594,859. APPARATUS FOR THE MANUFACTURE OF LAMINATED RUBBER SHEET. This arrangement is designed to laminate calendered inner-tube sheet or side walls for tires. It comprises a frame set in front of a calender and provided with a double series of driven rollers arranged to move an apron conveyer which encircles the lower roll of the calender where it receives the rubber sheet. The apron conveyer passes through the calender and racks a sufficient number of times to build the sheet to required gage when it is removed by a separate take off and rolling device.—William C. Stevens, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

1,594,881. VULCANIZATION. This device for forming a chamfered or taper edge on the end of an inner tube consists of a tubular split, spring clamp with the desired taper reamed at the split end, while the other fits snugly on the tube mandrel. This end is threaded on the outside to receive a sleeve which can be screwed toward the reamed end of the clamp and spring it inward upon the rubber tube to form a skived end.—Daniel E. Hennessy, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,592,372 Apparatus for transferring articles in orderly arrangement. Waldemar D. Kmentt, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,592,535 Mold. John Hugh O'Neill, Springfield, Missouri.

1,593,086 Washer placing apparatus. Arthur P. Lewis, assignor to The Miller Rubber Co., both of Akron, Ohio.

1,593,279 Battery jar mandrel. James H. Wagenhorst, Jackson, Michigan.

1,594,860 Staple making machine. Herman O. Stubbs, assignor to The Firestone Tire & Rubber Co., both of Akron, Ohio.

The Dominion of Canada

262,628 Rubber fabric making apparatus. The Fisk Rubber Co., Chicopee Falls, Massachusetts, assignee of Daniel E. Hennessy, Akron, Ohio, both in U. S. A.

262,699 Vulcanizer. John Lucian Grigsby Dykes, Chicago, Illinois, U. S. A.

262,841 Vulcanizer. Joseph Anctil and Alain Payette, both of Montreal, Quebec.

263,000 Apparatus for manufacturing hose and tubes. The Dunlop Tire & Rubber Goods Co., Ltd., assignee of J. Crawford Smith, both of Toronto, Ontario.

263,013 Selvage loop retainer. The Goodyear Tire & Rubber Co., Akron, Ohio, assignee of Joseph H. Purser, Los Angeles, California.

363,014 Cutter. The Goodyear Tire & Rubber Co., Akron, Ohio, assignee of Charles E. Hamilton, Pittsburgh, Pennsylvania.

The United Kingdom

251,357 Calender. Dunlop Rubber Co., Ltd., 1, Albany street, Regent's Park, London, and C. Macbeth, Oak Cottage, Belwell Lane, Four Oaks, Warwickshire, and W. J. Dexter, of Dunlop Rubber Co., Fort Dunlop, Erdington, Birmingham.

251,549 Tire repairing element. Soc. Des Appareils Mephisto, J. Manfredi et Cie, Cluses, Haute-Savoie, France.

251,550 Vulcanizers. Soc. Des Appareils Mephisto, J. Manfredi et Cie, Cluses, Haute-Savoie, France.

251,851 Tire molds. W. R. Gillam, Kent Road, Tallmadge, and M. A. Replogle, 802 Chalker street, Akron, both in Ohio, U. S. A.

252,415 Tire molding and vulcanizing apparatus. Dunlop Rubber Co., Ltd., 1, Albany street, Regent's Park, London, and C. Macbeth, Dunsinnan, Ladywood Road, Four Oaks, Warwickshire, and J. Mitton, Fort Dunlop, Erdington, Birmingham.

252,598 Molds. W. J. Beitel, Barberton, Ohio, U. S. A.

Germany

431,537 (July 12, 1925). Apparatus for squirting plastic masses. Otto Gergacsevics, Geneststrasse 5, Berlin-Schöneberg.

Designs

Germany

952,592 (March 2, 1925). Apparatus for making inner tubes. The Dunlop Rubber Co., Limited, London. Represented by Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt-am-Main, and T. R. Koehnhorn and E. Noll, Berlin S. W. 11.

953,342 (May 27, 1926). Vulcanizing mold. Societa Italiana Pirelli, Milan. Represented by W. Ziegler, Charlottenburg.

The Editor's Book Table

Book Reviews

"FINAL REPORT ON BENZOL." Published for The Chemical and Rubber Sections of the National Safety Council, Chicago, Illinois, by the National Bureau of Casualty and Surety Underwriters, May, 1926. Paper, 128 pages, 6 by 9 inches.

THIS exhaustive report on the poisonous effects of benzol in the rubber and other industries gives the results of years of investigation by a sub-committee on benzol cooperating with the Rubber Section of the Safety Council aided by medical and chemical experts. The cost of the investigation exceeded $6,000. Its presentation is made in ten sections covering the following topics: Chemistry and Industrial Uses of Benzol; Acute Benzol Poisoning; Previous Study of Chronic Benzol Poisoning; Effect of Benzol on the Blood Cells; Extent of the Benzol Hazard in American Industry; Intensive Study of Selected Industries; Results of Medical Examination for Signs of Benzol Poisoning; Experimental Study of Relative Toxicity of Benzol and Its Higher Homologues; Summary and Conclusions, and bibliography of 146 references.

The committee and its experts cannot be too highly commended for their service in presenting this valuable and authoritative study of an important industrial subject. While the body of the report is highly technical the summary at the close presents the findings in language entirely within the comprehension of the ordinary workman in whose interest the study was made.

This report merits the consideration of every rubber plant manager, physician and chemist who conducts or supervises industrial processes in which benzol is used.

"THE FINANCIAL NEWS RUBBER MANUAL AND DIRECTORY, 1926." Published by the Financial News, London. Compiled by Alfred J. Liversedge, A. M. Inst. C. E. Paper (latex), 100 pages. 8 by 13 inches. Illustrated.

In this handbook, their first compilation of its kind, the publishers have produced a work of unusual merit. It presents a succinct history of rubber, lists the numerous names, sources, prices, and varieties of crude rubber, gutta percha, balata, and chicle; epitomizes the latest botanical researches, gives earliest and latest latex analyses, describes tapping systems, yields of trees, properties of crude rubber and its manufacture, tells the story of the plantation industry, and the origin and working out of the Stevenson Act, incidentally noting the reaction of buyers to the price-standardizing scheme. Little alarm is evidenced regarding American rubber-growing projects.

Excellent, too, are the charts showing the relation of crude rubber production to motor vehicle output, world crude production and consumption, crude output and prices, map of the world's rubber regions, an extensive rubber bibliography; and a complete directory of British and Dutch rubber planting companies with comprehensive data of their essential operations.

"ENDURANCE TESTS OF TIRES." Technologic Paper of the Bureau of Standards No. 318. By W. L. Holt and P. L. Wormeley. Bureau of Standards, Department of Commerce, Washington, D. C. Paper, 7 by 10 inches, 6 pages. Illustrations, chart.

This technologic paper, a part of Volume 20, gives the endurance test results of various brands and types of tires covering a period of 2½ years. The development of test methods is given in detail followed by the results of the tests. These are classified and charted in a form that shows all the essentials of the endurance and cause of failure of each tire tested.

The following conclusions drawn from the tests recorded have practical interest for tire engineers and manufacturers generally. Slightly compounded friction appears to give a better test than pure-gum friction; within customary limits of air pressure, the higher the pressure the better the tire will stand up; fabric tires develop a much higher temperature than cords and their life is much less; separation is the principal cause of tire failure, occuring mostly between tread and breaker, breaker and cushion, cushion and carcass, or between the outer two plies; compounded tubes for truck tires appear to withstand the action of heat better than those of the pure gum.

"HANDBOOK TO BRITISH MALAYA." Compiled by Captain R. L. German, Malayan Civil Service. Obtainable at The Malay States Information Agency, 88 Cannon street, E. C. 4, London, England. Cloth, illustrated, 183 pages, 7 by 9 inches.

This well-illustrated volume contains in its fourteen chapters much information not only regarding the physical features of Malaya, but also as to the administration of the country, and its trade and commerce. There are extended references to Malaya's rubber cultivation.

"DAVISON'S TEXTILE BLUE BOOK." Thirty-ninth annual edition, July, 1926. Published by the Davison Publishing Co., 50 Union Square, New York, N. Y. Cloth, 1,754 pages, 5 by 8 inches.

In bringing this edition of a standard work up to date, many changes have been made and the names of several hundred manufacturers added. Aside from the regular reports, a separate list of the new mills is included, while a careful revision of the textile maps shows all towns where there are textile plants or dye works. Two editions of this useful reference work are prepared by the publishers, the "Handy Edition" under present consideration, and a larger size for special office use. The Salesmen's Directory also includes an alphabetical list of textile mills.

"COMMERCE YEARBOOK, 1925." Compiled by the Bureau of Foreign and Domestic Commerce, Julius Klein, Director. Department of Commerce, Herbert Hoover, Secretary. Published by the Government Printing Office, Washington, D. C. Cloth, 752 pages, with index, 6 by 9 inches.

This annual review of the commercial activities of the United States is, as usual, most comprehensive and ably prepared, with a wealth of detail regarding the various industries. Some sixteen pages are devoted to a summary of the work of American rubber manufacturers, with important data in connection with crude rubber imports.

New Trade Publications

UNDER THE TITLE "CAPTAX" THE R. T. VANDERBILT CO., INC., 50 East 42nd street, New York, N. Y., have issued a booklet descriptive of the tested semi-ultra accelerator known as "Captax" for which they control the exclusive sale throughout the world.

A WELL ILLUSTRATED CATALOG OF 258 PAGES, AND PUBLISHED IN three sections, has been prepared by The Hill Clutch Machine & Foundry Co., Breakwater avenue and West 65th street, Cleveland, Ohio, manufacturer of special machinery and power transmitting equipment.

"FAIRBANKS-MORSE MOTORS IN ALL KINDS OF SERVICE." A well-illustrated publication of seventeen pages, including in its review of many installations the equipment of certain important rubber factories. Published by Fairbanks, Morse & Co., New York, N. Y.

"THE COMING COLLAPSE IN RUBBER?" AN ECONOMIC ANALYSIS by L. L. B. Angas. This publication of seventy-two pages reviews conditions in the rubber industry since 1910, noting especially American requirements. It is printed by King and Hutchings, Ltd., Hillingdon Press, Uxbridge, England.

"DE LAVAL PUMPS AT JACKSON, MICHIGAN." THIS ILLUSTRATED bulletin describes a recent installation as carried out by the De Laval Steam Turbine Co., Trenton, N. J.

Abstracts of Recent Articles

MOTOR TRUCK IMPACT AS AFFECTED BY TIRES, OTHER TRUCK FACTORS, AND ROAD ROUGHNESS. Report of cooperative tests by the Bureau of Public Roads, the Society of Automotive Engineers, and the Rubber Association of America. The conclusions are as follows: As static load increases, road impact reaction increases and the ratio of road impact reaction to static load decreases. Thickness and narrowness of tread rubber are desirable in reducing road impact reaction. Increasing the thickness or profile height of rubber has a very marked effect in reducing road impact reaction in both single and dual mountings. Dual mounting caused heavier impact forces than the corresponding single mounting of the same total load-carrying capacity. Appreciable variation of cross-sectional rubber or breaks in its continuity, cause heavy repeated impacts to be delivered to the road. Dual-mounted tires should always be mounted with the tread design staggered.—James A. Buchanan, Bureau of Public Roads, and J. W. Reid, Rubber Association of America. *Public Roads*, June, 1926, 69-82. Illustrations, Graphs.

CONTRIBUTIONS OF SCIENCE TO THE RUBBER INDUSTRY. Review of the development of accelerators, anti-oxidants, reinforcing pigments and reclaimed rubber.—L. E. Weber, *Chemical & Metallurgical Engineering*, August, 1926, 485-6.

CHEMICAL ANALYSIS OF RUBBER. Different rubbers may be characterized by means of the fractions obtained by dry distillation. A sample of Java crêpe so treated yielded nearly 3 per cent of isoprene; a sample of sheet yielded no isoprene, but products resembling dimethylbutadiene were obtained from it.—C. J. Enklaar, *Chemisch-Weekblad*, 1926, 23, 209-210.

JOULE EFFECT WITH SYNTHETIC RUBBER.—L. Hock and P. Siedler, *Kautschuk*, April, 88-90.

THE ELASTIC PROPERTY OF RAW RUBBER DEPENDENT ON THE PACKING THICKNESS.—*Gummi-Zeitung*, July 23, 1926.

SUPER-ACCELERATORS. A comprehensive review of the chemistry and use of super-accelerators in hard and soft rubber vulcanization.—W. J. S. Naunton, *Institution of Rubber Industry*, June, 1926, 18-41. Tables.

ORGANIC DYES IN VULCANIZED RUBBER. Practical methods and data on the use of soluble and insoluble dyes in rubber.—T. J. Drakely, *Institution of Rubber Industry*, June, 1926, 42-54. Graph. Tables.

ELASTIC THREAD. Use in Shock Absorbers.—L. Rowland, *Institution of Rubber Industry*, 55-62. Graph.

RUBBER THREAD. Outline of Manufacture.—Anonymous, *India-Rubber Journal*, July 17, 1926, 111-112.

CURE CRITERIA. A mathematical discussion in criticism of the derivation of "Type" or "Correct Cure" of Schidrowitz.—*India-Rubber Journal*, July 31, 1926, 187-192. Graphs.

INFLUENCE OF PARTICLE SIZE IN THE PAINT AND RUBBER INDUSTRIES. The following papers were read at the joint meeting of the Institution of the Rubber Industry and Oil and Color Chemists' Association, London: Importance of Particle Character in a Rubber Pigment—D. F. Twiss; Particle Shape—Philip Schidrowitz; Influence of Particle Size in Rubber Manufacture—S. S. Pickles; An Apparatus for the Separation of Grit and Coarse Particles from Fine Powders—G. Gallie and B. D. Porritt. Illustrated; Particle Size Effects in Rubbers Subjected to Repeated Stress—T. R. Dawson; Detection of Grit in Rubber Pigments—E. A. Murphy.

VALUE OF A DIRECT MEASUREMENT METHOD FOR PARTICLE SIZE DETERMINATION.—Henry Green, *India-Rubber Journal*, August 7, 1926, 227-231.

THE NEEDLE-SHAPED RUBBER MOLECULE AS A PRACTICAL STRUCTURE THEORY.—E. Lindmayer, *Gummi-Zeitung*, July 9, 1926. 2261-2262.

HYDRAULIC EQUIPMENT.—E. von Strombeck, *Gummi-Zeitung*, July 9, 1926, 2264-2265. Illustration.

RUBBER SOLES FOR TENNIS AND DANCING SHOES.—Dr. Werner Esch, *Gummi-Zeitung*, July 9, 1926. 2265. Formulae.

PROTECTORS AGAINST AGING OF RUBBER.—Dr. Werner Esch. *Gummi-Zeitung*, July 16, 1926. 2318.

THE PACKING DENSITY OF RUBBER IN CONNECTION WITH AGGREGATION, VULCANIZATION, DEFORMATION AND TEMPERATURE.—M. Kröger, *Gummi-Zeitung*, July 16, 1926, 2319-2321. Tables.

COLORING LATEX WITH DYES STABLE TO VULCANIZATION.—Dr. Rudolf Ditmar, *Chemiker-Zeitung*, July 17, 1926, 528-529. Tables.

SECONDARY LEAF FALL DISEASE OF RUBBER.—Herbert Ashplant, *Planters' Chronicle*, June 26, 1926, 422-430. Tables.

CAPITALIST AND NATIVE RUBBER PLANTATION. I.—E. de Wildeman, *LeCaoutchouc & la Gutta Percha*, July 15, 13,192-13,194. Includes list of articles on the subject which have appeared in foreign papers.

PRACTICAL POINTS IN THE MANUFACTURE OF SHEET RUBBER.—H. N. Blommendaal, *Archief voor de Rubber Cultuur*, July, 1926. 307-329. Two plans, 10 full page plates, English version, 330-350.

AGING OF CRUDE AND VULCANIZED RUBBER.—Serial article. A. Cherbuliez, *Revue Générale du Caoutchouc*, May-June, 1926, 6-8.

EQUIPMENT USED IN CABLE WORKS.—H. Coignard, *Revue Générale du Caoutchouc*, May-June, 1926, 25-34. Illustrated.

AFRICAN RUBBER AND ITS FUTURE. II.—Auguste Chevalier, *Revue Générale du Caoutchouc*, May-June, 1926, 22-24.

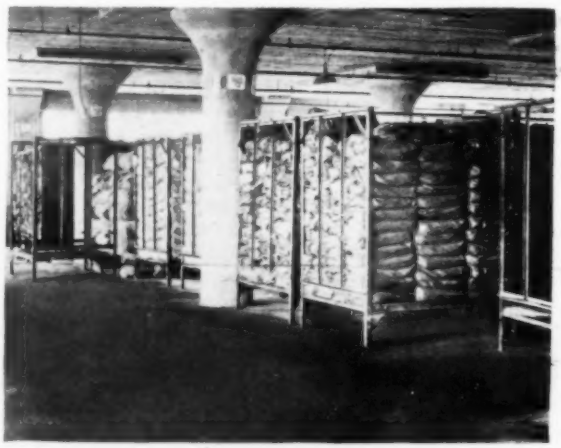
THE STRUCTURE OF RUBBER AND RÖNTGENOSCOPY.—Dr. Ernst A. Hauser, *Kautschuk*, July, 1926. 156-158.

FROM THE FIELD OF RUBBER COMPOUNDING.—Resumé. Dr. O. Hainbach, *Kautschuk*, July, 1926, 161-165. Table.

Improved Compound Storage Methods

Storage and rehandling of chemicals such as zinc, lithopone, carbon black, and other finely powdered compounding ingredients has become a more acute problem for the rubber factory since buying has developed into carloads direct from sources of supply. Especially on the above items, paper bags have succeeded wooden barrels almost wholly with resultant savings in packing and shipping.

Paper bag shipments of chemicals, however, will not stand much rehandling as a likelihood of their becoming broken and the contents a total loss is very great. Special racks with fittings for lift trucks have solved this difficulty, as they can be taken direct to the freight cars, loaded and placed in stores without rehandling until the material is ready to be put in the hopper bins or driers.



Special Racks for Compound Storage

The accompanying illustration shows a shipment of carbon black so racked in a neat, efficient manner.

New Goods and Specialties

Inflatable Bathing Cap

THE surf cap is a great aid to the swimmer because it is buoyant and will keep the head above water thus giving confidence to the beginner whose greatest difficulty is the fear of the head going under. The double walls, with air between, expand and produce a perfect fit to the irregularities of the head, making the entire surface of the cap snug and tight without the discomfort caused by tightly stretched rubber. To put on, blow a little air into its double walls, pull the cap well down over the ears and buckle the strap, the soft close fitting air cushion keeping the hair and ears dry. The cap is made of pure gum, heat cured, and will last two seasons. It may be procured in black, red and blue, solid colors or any combination, and three sizes, large, medium and small.—The Surf Cap Co., 934-936 North Lancaster avenue, Dallas, Texas.

Buoyant Surf Cap

New Idea Water Bag

This patented bottle is tufted all in one piece and seamless, the wide margin around the edges preventing leakage and strengthening the bottle. One side of the bottle is smooth, the other side cloth finished, the cloth preventing slipping and not burning or chilling the skin so quickly. It is so flat and flexible that it can be wrapped around the arm, and the water cannot all flow to the lower end, making it bulky and stiff and causing the bottle to roll; it lies where it is placed. The bottle is carefully made of the best rubber, cured in open steam, and may be procured in either brown or red.—Manufactured by The K & W Rubber Co., Delaware, Ohio.

Airo Water Bottle

Giant Toy Balloon

An impressively large balloon is the Giant Squawker which will gladden the heart of the small boy because of its size, length of time it "blows" and tone, just like a fog horn on a steamboat. The illustration showing the boy with this new balloon gives a good idea of the size which, when fullly inflated, is nearly three feet long and over a foot in diameter, the stem being a good handful for the ordinary youngster. The manufacturer, The Oak Rubber Co., Ravenna, Ohio, claims that this is the largest balloon ever put on the market, a mammoth among squawkers.

Giant Squawker

Rubber Mascots

The present vogue for fancy radiator caps has developed a new use for rubber, novel and serviceable ones being made of sponge rubber. These attractive ornaments are fitted with a spiked clip, which will grip the radiator cap of an automobile or the steering rod of a motorcycle. They are made in various colors and shapes, the illustration showing one fashioned like a policeman's head, another popular style representing a baby's head. The mascots are practical, easily washed, and will withstand all kinds of weather.—E. J. Lever, 33 Clerkenwell Green, E. C. 1, London, England.

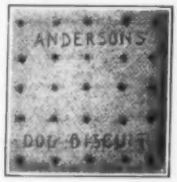
Policeman's Head

Theraphone Earpiece

A new hand receiver earpiece is Pape's Duplex Theraphone, which transmits phone messages clearly to both ears, and excludes surrounding noises. This device is durably built, with special semi-hard dead black sound tubing, swivel jointed, and may be placed over one or both ears.—The Evolution Phone Co., Inc., 221 East 124th street, New York, N. Y.

Rubber Dog Biscuit

The Albion dog biscuit is a splendid imitation of a biscuit made of a superior quality of rubber, very tough and resilient. It is 3 inches by 3 inches in size and five-eighths of an inch thick, and will float on water. The manufacturer of this article is Anderson, Anderson & Anderson, Ltd., 35 St. Paul's Churchyard, London, E. C. 4, England.



Albion Dog Biscuit

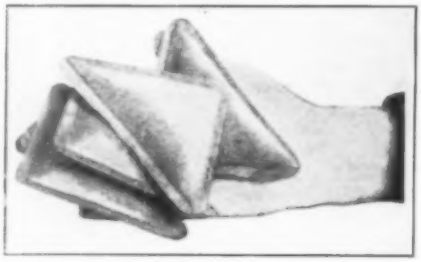
Rubber Bathing Toys

Bathing toys especially suited to children for the seaside or swimming bath are being introduced by J. G. Franklin & Sons, Ltd., 11-17 Colvestone Crescent, London, E. 8, England. These animals are made of strong rubber and can support the weight of an average person, and, being quickly deflated or inflated, are convenient for carrying to and from the water. The toys are made in three models, a fish, a swan and a seal; the "Super-Havvaride" swan having large air floats at each side, which give extra balance to the toy when in the water.

"Super-Havvaride" Swan

Radio Cushions

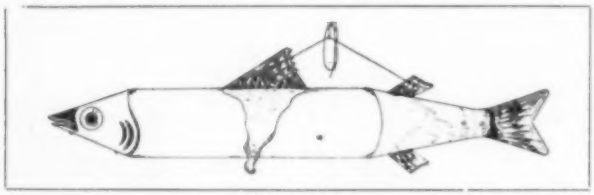
All trouble due to vibration of radio sets disappears, is the claim of the manufacturer, when a set of these cushions is installed. They give undisturbed tuning and increased sharpness of tone when used for microphonic noises and also prevent the scratching and marring of fine furniture. The cushioning effect of air has been taken advantage of in the development of these sets which are fashioned from a special grade of rubber and inflated without valves in the form of cushions. They are supplied in sets of four and installed by simply placing one cushion under each corner of the cabinet, no fastening being required.—The Airubber Corporation, Kingsbury and Superior streets, Chicago, Illinois.



Airubber Cushions

Rubber Foam Bait

A new variety of fish lure that has caught the fancy of lovers of the sport is the "Moose Bait" introduced by the Chicago Bait Co., 3012 East 92nd street, Chicago, Illinois. The bait, which resembles a live fish when in the water, is fashioned by hand and is made of rubber foam, a form of rubber which resembles sponge rubber but which is four times as light. The foam is cut the desired size after which a weight is enclosed, the hook and leader encased and the whole cemented together. A strip of white dam rubber is used on the belly, small pieces of the same rubber glued on for tail and fins. Eyes are fashioned of small bits and the fish, when completed, is a marvel of ingenuity.



Moose Bait

Moose Bait is made in two sizes, four and eight inches long for bass and muskellungs, and in various colors, the most popular being brown and grey.

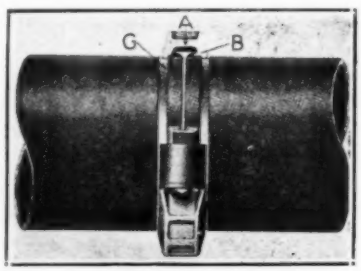
Rajah Canvas Shoes

One of the season's novelties in sport shoes is the Rajah canvas line made in oxfords and bals for men, women, misses and boys. These shoes are constructed with the best bleached and unbleached duck and either loose or cemented lining for the uppers. The outer sole and foxing is the well known Rajah unvulcanized crêpe. They should not be confused with others designated as crêpe or vulcanized crêpe since they are totally unlike them. The Rajah canvas shoe is not vulcanized and is constructed on lasts without heat being employed at any stage of the process. Their manufacture has been under development and test for three years and they are now marketed after a year of successful service test.—Alfred Hale Rubber Co., Atlantic, Massachusetts.

Rajah Crêpe Sole Oxford

Leaktite and Flexible Joints

The Victaulic pipe joint is an inexpensive, easily fitted and flexible coupling for use on pipe lines where the ordinary screwed or flanged, or the bell and spigot or other joints are now used. Owing to its flexible and leaktight properties, it has been found to be particularly suitable for use in colleries, mines and oil fields, the claim being made that twice as many lengths of piping can be laid with fewer men, as this joint has very few parts. It consists of two half housings, two bolts and a leakproof ring; the latter, of special rubber composition, is slipped over the pipe and the half housings bolted together over it, the whole operation being performed in less than two minutes on any size of pipe up to 12-inch diameter.—Victaulic Company of America, 26 Broadway, New York, N. Y.



Victaulic Joint

Football Harness

Complete protection for the player, especially when worn beneath skeleton football pants, is assured by the use of the football snugger harness recently developed by the Wilson-Western Sporting Goods Co., 2037 Powell avenue, Chicago, Illinois. This harness consists of hip, kidney, thigh and knee pad all in one piece. The knee pad, with sponge rubber cap, is laced to the thigh guard and combination elastic and canvas lacing arrangement at the back of the leg permits full freedom while insuring snug fit.

Rubber Egg Cups

One of the newest uses to which rubber has been put is shown in the accompanying illustration of an all-rubber egg cup. These cups, being unbreakable, will last for years and are made in a variety of colors: blue, green, mauve, terra cotta and marble effects.—Anderson's, 35 St. Paul's Churchyard, E. C. 4, London, England.

All-Rubber Cups

"Raincoat" for Football Fields

To meet the demand for a practical field cover which will keep the ground dry and permit games to be played in spite of rainy weather, the Rubber Products Section of E. I. Du Pont de Nemours & Co., Wilmington, Delaware, has developed a fabric for this use which the University of Illinois is the first to adopt. This gigantic "raincoat" is 316 by 166 ft., considerably larger than a playing field, thus protecting the territory behind the goal line as well as the ground along the side lines, and is cut in four sections. The fabric employed is of heavy canvas duck thoroughly impregnated and coated with a special rubber compound that not only renders it absolutely watertight but resistant to fungus growth, thus preventing it from becoming moldy or mildewed when rolled up and not in use.

Holdtite Over-Stocking

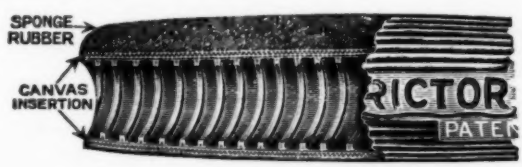
Silk Rubber Over-Stocking

From Surridge's Patents, Ltd., 73 Church street, Camberwell, London, S. E. 5, England, comes another variation of the popular stocking protectors. These Holdtite silk rubber guards are transparent showing the original color of the hose, will not tire the feet nor cause perspiration. The weight of each stocking is about two ounces, may be carried in the hand bag and is washed by simply sponging. The over-stocking can be supplied in slip-over pattern or to fit with side buttons and under strap.

There is a special style made of black rubber to be worn with black hose. Another design particularly adaptable for golfers is made in shorter length, also in black or transparent rubber.

Anti-Shock Rubber Grip

These grips are made to meet the demands of the cyclists who grip the handle bars at various positions and who, at the same time, wish to have the advantages of sponge rubber. They are seven inches in length and are easy to fit to the bars. Each box



Handle Bar Grip of Sponge Rubber

is supplied with electrician's tape and full printed instructions for attaching.—The Construction Tyre Co., Nursery Lane, Forest Gate, London, E. 7, England.

Tyee Super Quality Boot

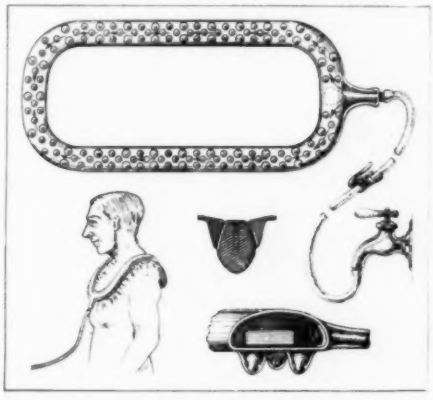
One of the newest lines of super quality warm boots for winter wear is made for the export trade by the Canadian Rubber Co. of Montreal. This line is known as the Tyee and is made in three models, short, storm-king and hip and in four lasts, Rex, Don, Rhome and Straight.

Tyees are very durable in quality and construction and most attractive in appearance. They are black with white plain edge soles and heels, knurled red foxing and finished at the top with white rubber binding. They have a warm fusion lining which adapts them for comfort in the coldest weather and are adapted to the rough service required by sportsmen, contractors, miners, etc.—United States Rubber Export Co., Ltd., 1790 Broadway, New York, N. Y.

Tyee Short Boot

Portable Bath Spray

Something new for the bath, a spray that may be applied to any part of the body, and used freely without even wetting the hair. As shown in the illustration the water passes through the neck of the spray, is then separated by the buffer and thrown up to each end, coming out through the buttocks in shower formation. The water does not come out straight, as may be seen in the picture of



Shower Bath

the adjusted shower, but loops downward thus exerting a massaging motion. The spray is self cleaning, the construction preventing the holes from becoming clogged. This shower may easily be packed in the suitcase and is invaluable when traveling.—Dr. J. A. Murray, 1966 Broadway, New York, N. Y.

New Dunlop Triple Stud Tread

This tread is now standardized on all Dunlop tires of the wired type and has been evolved by Dunlop experts to give maximum efficiency and safety. It has been especially designed to meet the new conditions imposed by the use of low pressures and the shaped blocks and vertical shoulders present permanently sharp edges no matter which way the tire tends to slip. It provides greater resistance to wheel spin and increased safety in braking. —Dunlop Rubber Co., Ltd., Fort Dunlop, Birmingham, England.

The Obituary Record

Treasurer of Michelin Tire Co.

FOLLOWING an illness of several months, Elmer E. Connolly, treasurer of the Michelin Tire Co., Milltown, New Jersey, died on July 25 of heart disease at his summer home in Avon, New Jersey.

Born September 13, 1880, in New Brunswick, New Jersey, Mr. Connolly was educated in the public schools of the town, beginning his business career in New Brunswick as a clerk in the National Bank of New Jersey. At the time of his death he was one of the directors of the above-mentioned institution. From the bank Mr. Connolly entered the employ of the International Automobile & Vehicle Tire Co., where he remained until the business was sold in March, 1907, to the Michelin Tire Co. In October of the same year he held the position of cashier with the Michelin organization, later being promoted to that of auditor.

Elmer E. Connolly

In 1914 Mr. Connolly was appointed assistant treasurer, while in August, 1915, the company honored him by making him a director and a member of the executive committee of the Michelin Tire Company of America. In further recognition of his services he was, in 1920, made treasurer of the organization, a post which he continued to hold up to the time of his death. Possessing initiative and excellent business judgment, Mr. Connolly was instrumental in aiding in the development of the Michelin organization through its system of branches and subsidiary companies, there being at the present time thirty such branches in the principal cities of the United States.

Interested also in improving conditions in his native town, Mr. Connolly devoted much time to the City Planning Commission of New Brunswick, being for many years a member of the New Brunswick Board of Trade, and a director of the New Brunswick Savings Institution. He was also president of the Water Advisory Board of New Brunswick, a director of the First National Bank of Milltown, vice-president of the Michelin Realty Corporation, and a member of the board of directors of St. Peter's Hospital. He was an Elk and a member of the local council of Knights of Columbus.

Mr. Connolly leaves a widow, two daughters, a brother and a sister. His passing is regretted by his many business associates, while it has been said that, because of his generosity and kindness of heart, every employe of the Michelin Tire Co. could call him friend.

Prominent German Rubber Manufacturer

The owner of the Berliner-Maschinen-Treibriemenfabrik Adolph Schwartz & Co., Berlin, and of the Berlin-Rixdorfer Gummiwaren-Fabrik Hans Schumann, Berlin, Eugen Czaika, died in Marienbad of heart failure on June 21, 1926.

At the age of 23, he made himself independent and acquired the belting factory which at the time was insignificant and originally made leather belting only, and developed it until it has become one of the foremost factories of technical rubber goods in Germany.

In 1903 he took over the Berlin-Rixdorfer concern, which had been founded in 1866, and developed this factory too, so that it now not only produces technical rubber goods but also belting and all kinds of tires.

Former President of John E. Thropp's Sons, Inc.

On August 12 John E. Thropp, a well known Trenton, New Jersey, manufacturer of rubber machinery, died at his home at Penns Manor, Pennsylvania. He was sixty-one years old. In failing health during the past five years, Mr. Thropp had relinquished three years ago all active participation in business, leaving the responsibilities of factory operations with his sons.

John E. Thropp, the second of the name, was the son of the founder of the business, the concern having been established in Trenton on a small scale in 1878, and gradually developing into the present large and prosperous plant. After the death of the father the business was maintained by the four sons under the name of the John E. Thropp Sons Co., the name being changed in February, 1925, to John E. Thropp Sons, Inc. Peter D. Thropp, one of the four brothers, died in January, 1923.

With Albert deLaski, now deceased, John E. Thropp, 2nd, was interested in designing a type of tire making machinery that is believed to have revolutionized the industry. The deLaski & Thropp Co. is the present holding company for these devices. Finding, however, that his health did not permit his carrying out his business plans, Mr. Thropp built an attractive home on the banks of the Delaware River at Penns Manor, and found much pleasure in residing there. He is survived by two sons, John E. Thropp, 3rd, and James W. Thropp, a daughter, and two brothers.

Vice-President of Franz Foundry & Machine Co.

John A. Brittain, vice-president of the Franz Foundry & Machine Co., Akron, Ohio, died July 22 at his home, 1120 North Howard street in Akron. Born in England fifty-two years ago, Mr. Brittain had for the past thirty years been carrying on business in Akron, much of the time as a merchant. Interested in various lines of activity, he became first secretary and then vice-president of the Franz Foundry & Machine Co., while he was also associated with several other organizations as either vice-president or director. Connected with such fraternal bodies as the Masons, the Elks, and the Knights Templar, he was also a member both of the City and Silver Lake Country Clubs. He is survived by his widow, a stepson and five brothers and sisters.

PANAMA CORPORATION NOT PREJUDICIAL TO AMERICAN INTERESTS?

At a meeting held recently in London by the Panama Corporation, Ltd., the presiding officer remarked that there was now opportunity for repeating a statement already published in the press, to the effect that there has never been any intention of prejudicing American interests, and that the cultivation of rubber forms no part of the company's activities in the Republic of Panama.

IT IS CONSIDERED UNLIKELY THAT THE PRESENT JAPANESE Government will favor any emigration on a large scale, such as would be involved in the reported Japanese project of obtaining rubber and cotton lands in the Amazon Valley. In the present budget estimates the Government asks an appropriation of yen 1,723,000 for encouraging emigration, only yen 260,000 of which is to be used for emigration beyond the limits of the Japanese Empire.

News of the American Rubber Trade

Rubber Industry Outlook

GOVERNMENTAL, banking and trade reviews of the prevailing business conditions agree that prosperity in the nation is general and widespread. All former industrial production records were surpassed in the first six months of this year, due largely to the high level operation of the automobile industry, the activity in building materials and construction and the output of petroleum products. Automobile production and building construction were the chief factors in the record. The rubber industry shares in this prosperity as a vital essential to the automobile industry in the use of motor vehicle tires.

Automobile production now is tapering off to late summer schedules although it is proceeding at a brisk rate. The production record for the United States in July was 355,446, a reduction of seven and a half per cent below the output for June. An important feature of the industry is the export of parts and accessories. In the latter classification are included tires and a variety of rubber goods with the possible exception of topping.

The decision of the Restriction Committee, announced in London July 30, that the exportable allowance of crude rubber from Malaya and Ceylon will continue at 100 per cent production for August, September and October was foreseen by the rubber dealers and rated in the trade generally a buyers' victory. The decision due November 1 will be made on the price average being kept above 21*d*. for the current quarter, failure in which will cause the exportable allowance to be dropped to 80 per cent of standard for November, December and January. That the November 1 decision may declare a 20 per cent reduction is a matter of much concern to rubber manufacturers because the price after the August 1 decision declined and very little buying interest developed subsequently.

London stocks of crude rubber steadily increased last month and with those in Singapore, Penang, the United States and afloat to the United States now total about 130,000 tons. This assurance of ample supply and stabilized prices is reassuring to the tire industry now operating on record schedules.

The potential tire demand is indicated by the growth of motor vehicles which now exceeds 20,000,000 in the United States, or 5 times the annual automobile production. The generally accepted estimate of tire demand in the United States is taken at 60,000,000 annually. The phenomenal popularity of balloon tires is shown by the 55 per cent increase in their production during the first six months of this year. In the same period high pressure tire production advanced only 9½ per cent, while fabric tire casing production has dropped 80 per cent. The output since March of balloon tires has exceeded that of high pressure cords and bids fair to ultimately eliminate them as they in turn have eliminated fabric tires.

The excessive tire manufacturing capacities due to expansion in 1920 and 1921, in the case of those companies that survived the slump, is now being utilized in large measure, if not completely, to supply the tire replacement requirements of the rapidly increasing numbers of pleasure cars, trucks and buses. The much discussed saturation point has lost apparently its significance, perhaps permanently.

In the mechanical rubber goods division general industrial activity has stimulated such industrial rubber goods as belting, packing and hose of all kinds. The sport footwear season is practically over and the mills are busy on heavy goods designed both for city wear and the heavy work of fishing, mining, etc. Heels and soles have responded to the improvement in the leather shoe industry. Manufacturers of topping and proofers are busy and the same may be said of manufacturers of insulated wire, druggists' sundries and novelties.

Financial

United States Rubber Co.

United States Rubber Co.'s sales for the six months ended June 30, 1926 amounted to $100,113,986, an increase of $7,583,859 compared with the corresponding period of last year. Net income, before interest on the funded indebtedness, but after all other charges including depreciation of plants, amounted to $8,156,842. Interest on the funded indebtedness amounted to $3,241,174, leaving net income of $4,915,668 after all charges. No part of the reserve of $3,000,000 established at the close of 1925, to be applied against the cost of crude rubber to be received during 1926, has as yet been used.

The results of operations of the plantations owned by the company have not been finally determined, but latest available reports indicate that they have been satisfactory. The credit balance in the open account with the plantations companies increased $4,087,921, which, added to the $7,338,305 as shown in the consolidated general balance sheet as of December 31 1925, made a total of $11,426,226 as of June 30, 1926, no part of which has been included in the income of the United States Rubber Co.

Inventories of finished goods and raw materials, and commitments, were at sound values except as to the uncertainty regarding crude rubber, the value of which cannot be definitely determined until the final results for the year shall have been ascertained. The reserve of $3,000,000, and the profits of the plantations companies, neither of which has been used, are more than ample to offset any adjustment that may be found necessary.

The Fisk Rubber Co.

The Fisk Rubber Co., Chicopee Falls, Massachusetts, reports net sales for the third fiscal quarter, ended July 31, as approximately $21,500,000, and compared with $24,500,000 in the third quarter of 1925. Adding in the $28,417,000 sales for the first half year, the total volume of the first nine months of the fiscal year which ends October 31, 1926, was $49,917,000, as against $54,300,000 for the same period last year.

The net profits after all charges for the third quarter, ended July 31, were approximately $1,500,000, equivalent after all dividend charges to $1.37 a share upon the 811,827 shares of common stock outstanding. Adding the net profits after all charges of $2,124,593, the net profits after all charges for the first nine months were $3,624,593. The balance after all dividend charges for the nine months was equivalent to $3.06 a share upon the common stock.

The Goodyear Tire & Rubber Co.

Net sales of the Goodyear Tire & Rubber Co., Akron, Ohio, exclusive of subsidiary companies, were $97,835,456 for the first six months of this year. The combined net sales of the Akron, California and Canadian companies and foreign branches were $116,788,924 for the same period. Earnings before interest and other charges were $7,147,213. Net earnings after all charges, but before payment of dividends, were $4,014,873. After providing for dividends of $2,826,528, the surplus on June 30, 1926, was $31,837,665. These earnings were attained without the use of any part of the special raw material reserve set aside on December 31, 1925. However, inventories on hand June 30, 1926, have been written down to market by applying $5,185,936 of such special raw material reserve, which has been correspondingly reduced to $2,314,064. This remains as a provision for such contingencies as may arise in the last half of the year.

The B. F. Goodrich Co.

In its statement covering the first six months of 1926, The B. F. Goodrich Co., New York, N. Y. shows net sales of $67,690,286, compared with $60,434,755 in the corresponding half of 1925 and net profit after interest, depreciation and taxes of $1,358,616 against $7,106,616. After the payment of dividends on the preferred and common stock, there was a deficit this year of $1,135,234 compared with a surplus in the same half of last year of $5,928,516.

Net profit for the first six months was equivalent, after preferred dividends, to 11 cents a share on the 601,560 shares of common stock outstanding, compared with $9.85 a share on 601,400 shares of common in the first half of last year. Total assets as of June 30, 1926, amounted to $124,203,435 against $92,764,175 a year ago.

Ajax Rubber Company, Inc.

Sales of the Ajax Rubber Co., New York, N. Y., for the first six months of the year, less returns and allowances, were 12 per cent greater in dollar volume than for the same period of 1925. The profits from operations covering the period are $665,643.54. Interest and depreciation amount to $329,770.89, leaving a net operating profit after deduction of these charges, for the six months ended June 30, 1926, of $335,872.65, which is greater than the same period of 1925. While careful study of the rubber situation has succeeded in maintaining a favorable level of cost with respect to rubber and finished goods, the shrinkage in crude rubber values during the period has been rapid and drastic, and it is deemed advisable to set up an inventory reserve of $250,000. After making this provision, as well as the federal income taxes, the net addition to capital for the six months' period is $74,279.85.

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Boston Woven Hose & Rubber Co.	Com.	$1.50	Sept. 15	Sept. 1
Goodrich, The B. F., Co.	Com.	$1.00 q.	Sept. 1	Aug. 16
Goodrich, The B. F., Co.	Pfd.	$1.75 q.	Oct. 1	Sept. 15
Hood Rubber Products Co.	Pfd.	$1.75 q.	Sept. 1	Aug. 20
Miller Rubber Co.	Pfd.	$2.00 q.	Sept. 1	Aug. 10

New York Stock Exchange Quotations

August 25, 1926

	High	Low	Last
Ajax Rubber, com.	9¼	8¾	9¼
Fisk Rubber, com.	18¼	17⅞	18
Fisk Rubber, 1st pfd. sta. (7)	80½	80	80
Goodrich, B. F., Co., com. (4)	50⅛	50⅛	50⅛
Goodyear Tire & Rubber, pfd. (7)	108¾	107⅞	107⅞
Goodyear Tire & Rubber, pr. pfd. (8)	107⅞	107¾	107⅞
Intercontinental Rubber, com. (1)	16⅛	15½	16
Keystone Tire & Rubber, com.	⅝	⅝	⅝
Miller Rubber, com. (2)	36⅝	36	36⅝
Norwalk Tire & Rubber, (80 cts.)	8⅞	8	8⅜
United States Rubber	60	59	59¾

Akron Rubber Stock Quotations

Quotations of August 21, supplied by Otis & Co., Cleveland, Ohio

Company	Last Sale	Bid	Asked
Aetna com.	18	16	18
Aetna pfd.	93	..	93
Falls com.	9½	..	9⅞
Falls pfd.	18¾	..	..
Faultless com.	43	42½	48
Firestone com.	109	108½	111
Firestone 1st pfd.	102½	102	102½
Firestone 2nd pfd.	97	97	..
General com.	160	155	162
General pfd.	107½	..	110½
Goodrich com.	53	..	..
Goodrich pfd.	98	..	..
Goodyear com. V. T. C.	35⅝	34	36
Goodyear pfd. V. T. C.	103¼	..	..
Goodyear pr. pfd. V. T. C.	107¾	..	..
India com.	29¾	..	30
Miller com.	34½	..	..
Miller pfd.	100	99½	100
Mohawk com.	40	34	45
Mohawk pfd.	70	..	73
Seiberling com.	24¾	..	24½
Seiberling pfd.	95	93	95
Star com.	12	..	15
Star pfd.	35	..	..
Swinehart com.	8½	..	..

President of Kelly-Springfield Tire Co.

Samuel Woolner, Jr., who a year ago succeeded Arnold L. Scheuer as president of the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., is a native of Louisville, Kentucky. Educated in the schools of that city and Peoria, Illinois, he later entered Cornell University, being graduated in the class of 1888.

Samuel Woolner, Jr.

In his early business experience he took much interest in the local government affairs of Peoria, his first business ventures also being in that city, these however having no connection with the rubber industry. From 1894 to 1898 he was a director of the Merchants National Bank of Peoria, in 1898 he was made president of that city's Board of Trade, while during 1918 and 1919 he was president of Peoria's Association of Commerce. While the war lasted Mr. Woolner was Food Commissioner of Peoria County, and also chairman of the county's Council of Defense. In 1915 he was appointed Commissioner to the Pan-American Exposition held in California.

Mr. Woolner's association with the Kelly-Springfield organization began in January, 1923, and on November 5 of the same year he was elected a member of that company's board of directors, and also a member of the executive committee. On November 18, 1924, he was appointed chairman of the board of directors, and on July 2, 1925, he was elected president of the company. He resides at the Ambassador Hotel, New York, N. Y., and is a member of the following clubs: Peoria Country Club, Creve Coeur Club, Hollywood Golf Club, Norwood Golf Club, and the Criterion and Lotos Clubs.

New Incorporations

BIERMAN TIRE SERVICE, INC., July 26, 1926 (Delaware), capital $25,000, par value $100. Incorporators: J. A. Bierman, A. L. Miller, M. A. Bruce, all of Wilmington, Delaware. Principal office, 120 West French street, Wilmington, Delaware. To deal in rubber goods and tires for automobiles, motorcycles, bicycles, etc.

BRADENTON RUBBER WORKS, INC., March 29, 1926 (Florida), capital $500. Incorporators and officers: C. E. Deane, president and treasurer; T. Thompson, vice-president; Wallace Tervin, secretary; all of Bradenton, Florida; and B. A. Magginiss, Elizabeth M. Goode and Philip Burwell Goode. Principal office, Bradenton, Florida. To manufacture and deal in rubber goods of all kinds and nature.

CONSOLIDATED AUTOMOTIVE PRODUCTS CO., July 31, 1926 (Delaware), capital $100,000, par value $10. Incorporators: E. E. Craig, A. L. Rawghley and M. S. Cook, all of Dover, Delaware. Principal office, with United States Corporation Co. of Dover, Delaware. To deal in automobile supplies and accessories.

CUDAHY-LINDA INTERNATIONAL CORPORATION, July 26, 1926 (Delaware), capital $5,000,000, par value $100. Incorporators: A. L. Miller, M. A. Bruce and G. M. Megear, all of Wilmington, Delaware. Principal office, with the Corporation Trust Company of America, duPont Building, Wilmington, Delaware. To manufacture, produce, plant, buy, etc., rubber and the products and by-products thereof of every kind and articles consisting or partly consisting of rubber.

GOODYEAR RUBBER BALL & NOVELTY CORPORATION, August 4, 1926 (New Jersey), capital $250,000 preferred and $15,000 common no par. Incorporators: Emanuel Shavick, 356 East 41st street; Bernard T. Stafford, 454 East 39th street; William H. Young, 325 Ellison street; all of Paterson, New Jersey. Principal office, 146 Market street, Paterson, New Jersey. To manufacture rubber toys and novelties of all kinds.

HANCOCK TIRE CO., March 31, 1926 (Tennessee), capital $10,000. Incorporators: C. E. Hardcock, D. C. Coverdale, Charles L. Cornelius, W. H. Swiggart, Jr., and W. K. Cook. Principal office, Old Hickory, Tennessee. To deal in automobile accessories.

MOORE TIRE SALES & SERVICE CO., August 19, 1926 (New Jersey), capital $20,000. Incorporators: George C. Moore, 68 Maolis avenue, Bloomfield, New Jersey; Nathan Ruebens, 731 South 13th street, Newark, New Jersey; and Joe Krasner, 605 Hunterdon street, Newark, New Jersey. Principal office, 800 Broad street, Newark, New Jersey. To deal in automobile tires at wholesale and retail.

RHINEHART TIRE SERVICE, INC., April 19, 1926 (Louisiana), capital $5,000. Incorporators and officers: Albert F. Lanier, president; C. T. Rhinehart, vice-president, and F. E. Collins, secretary and treasurer. Principal office, Alexandria, Louisiana. To buy, manufacture, repair, etc., tires of automobiles or other vehicles and any other kind of personal property.

TENACITY PRODUCTS CORPORATION, July 21, 1926 (New York), capital $100,000, divided into 1,000 shares of 7% preferred stock, having a par value of $100 per share, and 5,000 shares of common stock of no par value. Incorporators and officers: Albert F. Petschke, president; John Leitner, vice-president; and E. L. Taylor, secretary and treasurer, all of Buffalo, New York; and John Fisher, of Niagara Falls, New York. Principal office, 19 Bush street, Buffalo, New York. To manufacture rubberized cord belting and other products.

THE WORLD TIRE CO., INC., April 10, 1926 (Ohio), capital $5,000. Incorporators and directors: Jacob Neifeld, 2505 Vermont avenue; Louis Lazarus, 1930 Linwood avenue; David Teitelbaum, 1621 Walnut street; Mae Molkenbur, 829 Spitzer Building; and Bert Hyams, 1166 Dorr street, all of Toledo, Ohio; and Joseph Neifeld, Joseph Fingold, B. Geiger, and A. Rothschild. Principal office, 1166 Dorr street, Toledo, Ohio. To deal in tires, tubes and accessories both wholesale and retail.

The Rubber Trade in the East and South

James Bruce has been elected vice-president of the International Acceptance Bank, Inc., 52 Cedar street, New York, N. Y., and also of its subsidiary, the International Acceptance Securities & Trust Co. Other appointments are: John A. Milholland, assistant treasurer of the last-mentioned organization; James P. Wood, manager of the foreign credit department of the International Acceptance Bank, Inc.; and Benjamin Strong, Jr., manager domestic credit department.

Walter C. Weller, for more than two years connected with the sales organization of the Binney & Smith Co., is now associated in a similar capacity with Wishnick-Tumpeer, Inc., 251 Front street, New York, N. Y., dealer in chemicals, oils, and pigments for the rubber industry.

The Rand Rubber Co., Inc., formerly the Brooklyn Shield & Rubber Co., is carrying on operations in a new factory located at Sumner avenue and Halsey street, Brooklyn, New York. There

Rand Rubber Co., Inc., Brooklyn, N. Y.

has been no change in the company's ownership, personnel or policies, the present executives being H. P. Rand, president; and L. H. Rand, secretary and treasurer. The concern manufactures the well known "Rand" brand of rubber goods.

Black rubber clothing and raincoats are being manufactured by the Excello Rubber Co., Inc., 225 Fifth avenue, New York, N. Y. The company has increased its capitalization from $50,000 to $150,000.

The Star Rubber Co., Inc., Akron, Ohio, has appointed C. E. Herrick special factory representative for the state of Connecticut. The Star organization reports a continuance of good business, that for the month of July being the best in the company's history. D. A. Grubb is general manager.

The United States Rubber Co., 1790 Broadway, New York, N. Y., has opened new and larger branch offices at 1427-29 Chew street, Allentown, Pennsylvania. As a subsidiary of the Philadelphia branch, the new division will as wholesalers, carry a large stock of tires and accessories. Fred A. Malsnee will continue as branch manager, a position which he has held since the establishment in 1917 of the Allentown division.

The Carlisle Tire & Rubber Co., Carlisle, Pennsylvania, is building a new boiler room and also erecting a factory addition measuring approximately 213 by 175 feet. With the completion of these improvements the company will be in a position to manufacture from 20,000 to 25,000 inner tubes daily. Charles S Moomy is president and general manager.

Plans have been prepared for the rebuilding of the plant of the Virginia Carolina Rubber Co., Inc., Richmond, Virginia, a part of which was recently destroyed by fire. Meanwhile the factory output is being fully maintained in temporary quarters, with a production of approximately 7,000,000 Va-Car tire patches yearly. C. W. Myers is general manager.

Tube Prices Eighteen Years Ago

A letter received a few days ago at the New York branch of The B. F. Goodrich Rubber Co. was posted 18 years ago at a point less than a mile from the present location of the branch office.

The time, however, was not consumed in travel, for the letter got caught in the mail chute in the Mills Building, where it reposed until wreckers tore apart the chute and found it.

The letter contained a check drawn for $25.50 to cover the retail price of two inner tubes. The same tubes today would not cost more than $10.

This comparison of present day tube prices with those 18 years ago accents in a very impressive way the progress made by the rubber manufacturing industry. The very growth in the use of the automobile has depended as much upon this progress in rubber manufacture as it has upon standardized production of motor cars. Eighteen years is a long time for a letter to be delivered, but it is a short time for such an economic change as the lost letter indicates has taken place in the rubber industry.

The Rubber Trade in Rhode Island

Practically every line of rubber manufacture in Rhode Island shows business improvement and the indications in almost every instance are for a continuation of these conditions for some time to come. During the past few weeks most of the plants have been closed down for the vacation periods during which time advantage was taken for inventory and to make such repairs as were found necessary following general overhauling of machinery and equipment. Upwards of 2,000 employes were affected, but prospects are favorable to an indefinite period of steady work so the respite was welcomed by the most of the operatives. The wire division has continued without any shut down.

The narrow elastic fabric manufacturing industry in the Blackstone Valley is prospering and supplying employment to many more persons than was the case a year, or even six months ago. Factors responsible for the increased demand for narrow fabrics, including elastics, are varied and not easily determined. There are certain fundamentals which undoubtedly have operated to the advantage of the industry. For example, novelties in wearing apparel such as caps consisting of nothing but a colored visor and elastic straps; "jazz" garters and the like, have contributed to the demand for the narrow fabrics. A great quantity of material is absorbed by the "cutting up" manufacturers in centers like New York, who cut up the fabric for novelty purposes. These manufacturers had, until a few months ago, depleted their stocks without renewing them, fearing a selling slump. The demand, however, has continued, and orders are flowing in with unprecedented rapidity.

Sale of the O'Bannon properties at West Barrington, Rhode Island, to the Cranston Worsted Mills, operating plants at Bristol, was completed July 30. The West Barrington property consists of what was known as the leather and rubber divisions of the O'Bannon Co. The plant known as the leather division contains about eight acres of land on which there is a large factory and a group of smaller buildings. The rubber division has about four acres of land and a large frame building with a brick annex. By a vote of the stockholders nearly two years ago, the company decided to cease operations. The O'Bannon Co. formerly

operated plants in Phillipsdale, Rhode Island, and Taunton, Massachusetts, in addition to those at West Barrington. Equipment in all the plants has now been sold, the closing out of the holdings in this state having been completed by the real estate transaction above noted.

According to a statistical report by the Department of Commerce, Rhode Island not only maintained its export position during the first quarter of the current year, but the state's total foreign shipments of merchandise valued at $4,148,774 represented an increase of more than $300,000 over the exports in the corresponding three months of 1925. In this connection it is interesting to note that exports of rubber and rubber manufactures valued at $954,086 during the first quarter of 1926 led all other foreign shipments from Rhode Island during that period.

The first annual outing of the employes of the American Fabric Co., Inc., and the American Insulated Wire Corp., Providence, was held at Rocky Point on Narragansett Bay, July 31. Both plants closed all day and the workers made the trip to the resort in special electric cars and automobiles, arriving at the grounds in time for luncheon. A shore dinner was served following a long card of sports and games and a good time was enjoyed by everyone.

Some thirty employes of the stitching room of the National India Rubber Co., Bristol, Rhode Island, enjoyed an outing at Nantasket Beach, Massachusetts, August 9. The trip was made by automobiles and at the beach dinner was enjoyed and then all the various attractions visited. The annual outing of the maintenance department of the National plant was held a few Sundays ago at the shore, where a bake was served. During the afternoon sports were held, including a baseball game between the carpenter shop team and the machine department, which was won by the latter.

The City Council of Central Falls has voted an appropriation of $2,700 for the purchase of new fire hose.

The Conimicut Volunteer Fire Co. of Warwick has voted to purchase 500 feet of new hose.

Fisk Prominent in Accident Reduction

Remarkable progress in accident reduction has been reported to the Pawtucket and Central Falls Safety Council by the Ninigret division of The Fisk Rubber Co. Similar surveys covering the first six months of 1926 as compared with the first six months of 1925 are being prepared. The report of The Fisk Rubber Co., as submitted to the Safety Council reads as follows:

In a comparison of accident statistics by the Ninigret division of The Fisk Rubber Co. which employs 2,000 operatives in plants at Pawtucket, New Bedford and Jewett City, the company reports during the first six months of 1926 a reduction in lost time accidents of 76 per cent and in compensable cases a reduction of 79 per cent over the experience during the first six months of 1925.

In the New Bedford textile contest conductd by the Massachusetts Safety Council, with ten mills competing over a period of three months, the Fisk New Bedford plant won with no lost time accident. In a three-month continuation of the contest, Fisk took third place on frequency of lost time accidents but maintained its lead in compensable case frequency.

Lost time accidents are those which prevent the operator's return to work by the date or hour of his next shift. Each one of the three plants, Pawtucket, New Bedford and Jewett City, showed very marked reductions both in lost time accidents and compensation cases. In lost time accidents the New Bedford plant leads with a reduction of 85 per cent over the first six months of last year. Jewett City, while having a higher frequency rate than Pawtucket, shows a greater reduction, namely 75 per cent against 60 per cent, for Pawtucket. During four of the first six months of 1926, Pawtucket and New Bedford had no lost time accidents. Jewett City had none during three months, and the whole Ninigret division went through the month of May without a lost time accident.

In compensation cases, Pawtucket is in the lead, having no compensable accidents charged against them for the first six months of this year. New Bedford is second with a reduction of 81 per cent and Jewett City third with 78 per cent. The last two plants had no compensable accidents during four of the first six months of the year. At the end of June there had been but fourteen lost time and six compensable accidents on the whole Ninigret division as against 53 and 26 respectively for the first half of 1925.

Ninigret officials attribute the accomplishment in the safety program to the cooperation which all the employes of the company have manifested. In stimulating interest in the safety contest, The Fisk Rubber Co. has offered a bronze clock suitably engraved, the test being held between the tire divisions at Chicopee Falls, Massachusetts, Cudahy, Wisconsin, and the Ninigret division.

The Rubber Trade in New Jersey

All branches of the New Jersey rubber industry, with the exception of the hard rubber manufacturers, are busy at the present time and are very optimistic over the coming fall and winter season. There has been a large increase in the output of tires and tubes at the Trenton plants, one concern being compelled to place three shifts of tiremakers at work. Orders are plentiful for all kinds of mechanical rubber goods, but hard rubber production does not show much activity. However, manufacturers believe that business will be better in the fall.

The Combination Rubber Manufacturing Co., Trenton, New Jersey, has increased working hours and added many extra employes. Two extra shifts are now making tires and tubes. The company claims to be $150,000 behind in orders.

The Pierce-Roberts Rubber Co., Trenton, New Jersey, expects to have its entire new plant in operation shortly, the first unit of which is now operating. The company will manufacture a new line of mechanical rubber goods.

The Joseph Stokes Rubber Co., Trenton, New Jersey, reports that business is not up to expectations in the hard rubber line.

In an order filed in the United States District Court of Trenton, Judge Runyon charged that William A. Weinmann of this city had stifled competition at the receivership sale of the Bergougnan Rubber Corporation's plant by entering into a previous agreement with other bidders. Judge Runyon's order formally sets aside Weinmann's purchase of the factory. Weinmann and his associates bid in the plant and equipment for about $150,000 on June 18. In a separate order, Judge Runyon also set aside the joint purchase of the rubber firm's personal property by Weinmann and the Citron-Byer Co.

The Murray Rubber Co., Trenton, New Jersey, is now running three shifts of tire makers and two shifts of tube makers, and was recently compelled to refuse business in order to take care of regular trade.

The Manhattan Rubber Manufacturing Co., 61 Willett street, Passaic, New Jersey, specializing in the production of mechanical rubber goods, is building a plant addition designed especially for the use of the company's laboratory, testing, and engineering departments. The new construction will measure 120 feet in length and 75 feet in width. A. F. Townsend is president of the Manhattan organization.

Raritan Rubber, Inc., Jersey avenue, New Brunswick, New Jersey, is now operating at capacity in its production of solid rubber tires for commercial vehicles. The Astoria Truck Tire Co., Long Island City, New York, is the distributer of these tires throughout the New York City territory. John J. Bush is president of the Raritan company.

The annual outing of the employes and officers of De Mattia Brothers, Inc., Garfield, New Jersey, and the De Mattia Foundry and Machine Co., Clifton, New Jersey, was held July 31 at Klein's Grove, Singac. Over 150 employes were present, and many were interested in participating in the various games and competitive contests. After the luncheon, gifts were presented to three of the executives of the organization.

De Laski & Thropp Tire Building Patent Is Valid

Judge Bodine in the United States District Court in New Jersey has rendered a decision sustaining the validity of United States Patent No. 1,119,326, which covers a tire making machine owned by the de Laski & Thropp Circular Woven Tire Co., Trenton, New Jersey.

The suit was against the Murray Rubber Co., for using the Banner tire making machines and the Court decided the machines infringed the patent. These machines were originally installed in the Murray plant, then known as the Empire Rubber Co., by arrangement with Frank A. Seiberling who controlled the distribution of the Banner machines at that time.

The defense comprised counsel representing The Goodyear Tire & Rubber Co., Frank A. Seiberling, and The Banner Machine Co., as well as the Murray company; although the latter was the only defendant of record. In its opinion the Court says:

"The defendant is a reorganization of the old Empire Rubber Co., whose affairs have been, for many years, in the hands of receivers appointed by this Court. The defense, however, of this case was conducted by patent lawyers of very great ability and every issue was presented with marked care and capacity. This statement is made so that the impression will not arise that an unimportant infringer, lacking in means to properly defend, was before the Court."

The main point involved was an arrangement whereby the angle of the stitching rolls can be changed so as to shape the fabric on the sides of the tire and also around and on the bottom of the beads. The Court broadly sustains this feature as an original invention of the Thropps.

It was brought out that The Goodyear Tire & Rubber Co. tried to include in one of its patents the same claims that are in the Thropp patent, but it was not able to prove prior invention.

A considerable number of tire companies are licensed under this patent, and it is expected that additional suits will be brought against other infringers who are not licensed.

C. Edward Murray, Jr., president of the Murray Rubber Co., states that an appeal will be made to a higher court.

The Rubber Trade in Massachusetts

Production is being accelerated in the leading lines of the rubber industry in Massachusetts, and the fall outlook indicates that operations will exceed those of a year ago, when exceptional business was enjoyed. Footwear plants are booked to capacity on winter goods, and all plants have been advertising for gaiter and gum shoe makers.

Since the price cut, tire stocks have been depleted and local mills are behind in their orders on 4-inch straight-side high-pressure tires. This condition is ascribed to the deferred renewal of equipment on used cars.

Mechanical goods factories report improved business, although this line has been slower in getting under way than tires and footwear. Heel and sole business is coming back into its own, and reclaimers are experiencing better business all along the line.

Goodwin, Parker, Raymond & Comstock, Boston attorneys, have been named executors of the estate of the late Dr. Lothar E. Weber, and are offering the entire stock of chemicals and equipment for sale.

Manufacturers of waterproof garments have formed an association and will confer with union officials who seek to put union conditions in force in the 50 shops in Boston. Better sanitary conditions, a 42-hour week, a minimum wage of $44 a week for male operators, $35 for female operators, $46 for cementers, $44 for cutters, pressers and tailors, and $25 for finishers were included in the demands presented to the manufacturers.

The Goodrich Tire Service Co., handling Goodrich automobile and truck tires, has moved to larger and more convenient quarters at 96 Broadway, Boston, Massachusetts. Robert C. Freeman is president and Nathaniel A. Finck is treasurer.

Daniel B. Morris, 131 State street, Boston, Massachusetts, has been appointed New England distributer of the products of the Security Rubber & Belting Co., 2837 South La Salle street, Chicago, Illinois. Mr. Morris will have as his associate Neal H. Lyke, formerly representing the Ruboil Belting Co. G. W. Bennett, sales engineer of the Security company, will continue his duties in the New England territory, and is at all times available for engineering service.

Frederick S. Bacon, formerly president of the Puritan Dye & Chemical Co., has joined Arthur D. Little, Inc., Cambridge, Massachusetts, the well-known chemists, engineers and managers.

M. Norton & Co., Medford, Massachusetts, dealers in scrap rubber and used rubber machinery, have leased new quarters near Riverside avenue on Locust street, following the $25,000 fire which destroyed the old plant on July 25.

The sale at auction of the New England Tire & Rubber Co.'s plant, Holyoke, Massachusetts, to the Mercantile Credit Plan, Inc., for $220,994.59, marks the final winding up of this company, which has been in bankruptcy for over a year. What the purchasers intend to do with the plant has not been revealed.

The local rubber trade is interested in the new business venture of Henry ("Hank") Bjorkman, former Dartmouth football captain as a member of Walter Camp's last All-American eleven. Bjorkman, whose connection with rubber and shoes started with summer time work at the Converse Rubber Shoe Co., has organized the Bjorkman-Davis Shoe Co., Middleboro, Massachusetts, for the manufacture of leather sport shoes with rubber soles. These will be marketed in the colleges of the country by mail through student representatives. Samples now out are equipped with Panco rubber soles, a local product.

The name of the Firestone-Apsley Rubber Co., Hudson, Massachusetts, has been changed to the Firestone Footwear Co. For nearly seven years this organization has been manufacturing rubber and canvas footwear, and operating under the management of the Firestone Tire & Rubber Co., Akron, Ohio. The change in name emphasizes the fact that the footwear concern is meeting the Firestone standards of production and service.

The United States Rubber Co. has discontinued the manufacture of "Keds" and other tennis shoes at the Glove plant in Naugatuck, Connecticut, and will concentrate production of these shoes at the National India Rubber plant at Bristol, Rhode Island.

Tennis samples go out to the trade September 1, carrying lower prices. Crêpe soles are still popular, and sport shoes in new color effects of both rubber and fabrics predominate.

The Firestone Tire & Rubber Co., Akron, Ohio, has bought a small strip of land adjoining its cotton mills at Fall River, Massachusetts. The property might later be utilized should the company consider any program for expansion.

The official Massachusetts census shows that rubber goods, including tires and tubes, were manufactured to the value of $84,681,207, and rubber boots and shoes to the value of $34,859,447, making the total for the industry $119,540,654. This makes the rubber industry the fifth largest in the state, being exceeded by leather boots and shoes, cotton goods, woolen and worsted goods, and electrical products, in the order named.

Synthetic Rubber from Petroleum

Rubber was one of the subjects discussed last month at the Institute of Politics in session at Williamstown, Massachusetts. Dr. Roger Adams, professor of chemistry at the University of Illinois, said that a modest expenditure in hope of making a cheap synthetic rubber from petroleum would be more economical in the end than spending hundreds of millions of dollars in the Philippines, Africa

and elsewhere for developing new plantations. Dr. Adams added that it would be possible to produce 4,000,000,000 pounds of rubber from 52,000,000 barrels of petroleum.

Davidson Rubber Co. Prosperous

One of the most prosperous rubber companies in Massachusetts is the Davidson Rubber Co., of Boston, manufacturers of druggists' sundries. The financial report recently filed with the state is as follows:

ASSETS		LIABILITIES	
Plant	$60,384.21	Common Stock ($100 par)	$200,000.00
Merchandise	23,646.52	Accounts Payable	2,129.20
Cash	57,969.46	Surplus	216,271.42
Securities	288,400.43	Reserve for Taxes	12,000.00
	$430,400.62		$430,400.62

Officers of the company are: Alexander M. Paul, president and treasurer; M. L. Pettengill, clerk; directors, the above and George D. Brown, Lucile P. Paul and Clarence L. Newton.

Fisk Company Strong Financially

"With the worst now behind them, it looks as if rubber companies are headed for the best year in their history in 1927," said Harry T. Dunn, president, The Fisk Rubber Co., Chicopee Falls, Massachusetts. "The industry is emerging from two years of abnormal conditions, caused by over-speculation and sharp fluctuations in crude rubber, with every prospect that greater stability will prevail in the future, which should be reflected in very satisfactory earnings for well-managed companies.

"The Fisk company is working close to capacity, turning out 25,000 casings a day and around 36,000 tubes. Earnings are running at a rate which compares favorably with average earnings reported for last year, and the company is in a strong financial position."

Mr. Dunn announced that E. H. Broadwell, first vice-president, will assume complete supervision of the entire commercial activities of the company, with offices both at Chicopee Falls and New York. B. H. Pratt, vice-president, will retain supervision over the jobbing division at the Cudahy, Wisconsin, plant, and J. D. Anderson, vice-president, will make his headquarters at Chicopee Falls, in charge of all tire manufacturing at both Chicopee and Cudahy plants.

TIRE FABRIC PULLER

The operation of stripping plies and treads from old tire casings, whether cord, fabric or balloon, is a difficult task not to be attempted by hand especially in the case of truck tire sizes.

A most practical and efficient power device especially designed for this work is here described. The machine operates by winding the fabric on one arbor and the casing on another. The work can be stopped instantly at any point without rolling back. Any number of plies can be pulled at a time and one operator does the work that usually requires two.

The special clutch designed for this machine is noiseless, gives no trouble and is thoroughly durable. It will start the machine gradually or instantly and will stop in like manner. It is also adjustable to any desired speed of operation as required by the conditions of working. The machine is motor driven requiring 2 horsepower and is under foot-treadle control by the operator who stands always in front of the machine.—Reichel & Drews, Inc., 452-456 North Ashland avenue, Chicago, Illinois.

RUBBER PRODUCTS WERE SECOND IN OHIO'S TOTAL EXPORT TRADE for the first quarter of 1926, according to the Department of Commerce. Next to machinery in valuation, rubber goods exported from the state totaled $6,872,752.

AKRON'S THREE LARGEST RUBBER COMPANIES PAID $838,091 IN taxes at the mid-year collection just closed. Goodyear heads the list at $338,920, while Goodrich paid $249,213 and Firestone, $149,958.

The Rubber Trade in Ohio

Previous monthly records for sales and production of automobile tires, tubes and other rubber goods were broken during August by Ohio rubber factories, which are receiving a full share of the general midsummer boom in business. For the past two or three months many of the medium sized and smaller companies have been running at top speed, and now the big plants with 10,000 tires daily production and more have swung into full production.

With the tourist season at its height, and more cars on the highways than ever before in the history of the country, dealers have found tire and tube sales increasing by leaps and bounds. This has been reflected in heavy shipments from the factories, which have reduced stocks of finished goods in the hands of manufacturers to the lowest point of the year. Original tire equipment business also looms better for the remainder of the year than it did a short time ago, owing to better conditions prevailing in the motor industry.

Movement of tires through dealers during August is estimated at close to 6,000,000. Dealer sales during the first six months of the year are figured at approximately 15,000,000 tires, compared with 19,500,000 the first half of 1925. On this basis dealers will have to move 21,500,000 casings between July 1 and December 31 to reach the 36,000,000 mark, which manufacturers claim is a fair estimate for 1926 dealer business. Sales through dealers last year were approximately 33,000,000 casings.

Production has been speeded up to an average of better than 132,000 tires a day in the Akron district. The so-called "Big Five," including Goodyear, Goodrich, Firestone, Miller and General companies, are alone turning out approximately 113,000 casings daily. In addition there are Seiberling and Mason, with about 8,000 daily production, Mohawk and India, with around 2,000 each, Fall Rubber, American and others. Goodyear is the world's leader in tire production, maintaining a daily output at present of 46,000 tires at its Akron plant. Capacity operations are also reported at the Canadian and California plants.

In other lines of rubber goods manufacture steady gains are reported, especially in mechanical goods. Most companies have already adjusted their business on the basis of the first six months. Having absorbed losses due to sagging prices of raw material and finished goods, they are in a position to show better earnings for the last half year. Continuance of good motoring weather and general industrial prosperity over the country should enable the industry as a whole to show substantial profits during the last six months of 1926.

One interesting development of the midsummer activity has been a somewhat unexpected increase in demand for high pressure casings. Balloon tire sales have also been at a high rate, but some of the manufacturers in gaging their future market some months back did not fully consider the fact that there are millions of cars still running which need the old type casing for replacements. Practically all of the new equipment installed recently has been for the manufacture of balloon tires. For this reason some manufacturers have found difficulty in the past few weeks to meet orders promptly for high pressure tires.

The only hope of relief from the present multiplicity of tire sizes is that 3,000,000 cars are passing out of existence each year, points out William O'Neil, president of the General Tire & Rubber Co.

"It is inevitable that fewer tire sizes will be made, and that car and tire makers will finally reach an understanding so that the dealer's stock problem will be simplified." In the meantime the public is benefited, because present dealer requirements make it difficult for the curbstone tire seller. A dealer must have more capital than formerly if he is to properly serve his trade. Lack of cooperation among both car manufacturers and tire makers is the principal reason why they do not get together and reduce the number of tire sizes. The balloon tire has complicated the problem,

over 60 sizes being recognized now as necessary for a complete dealer's stock.

About 2,000 employes of the Goodyear Tire & Rubber Co., Akron, Ohio, held their midsummer dancing and swimming party August 13 at Summit Beach Park. The party proved to be one of the largest and most successful events ever staged by Goodyear. Jack Kidney was chairman of the entertainment committee.

"Zipper" girls are employed in the Akron factories of The B. F. Goodrich Co. as walkers to test rubber footwear. For years automobiles have been used to test tires, but the boot shod walkers are a new departure in test work. The nine girls on the first shift, here pictured, walk 54 miles a day, 324 miles a week, and 16,848 miles a year. At the end of eight hours, another shift takes

Goodrich Zipper Girls Walk Fifty-four Miles Daily

their place. Pedometers are used to determine the actual mileage.

"The idea is to get Zippers tested in a way that approximates actual service conditions," Goodrich officials explain. "The girls also walk up and down stairs to test out the patented hookless fasteners against ankle strains and bending."

More rubber boots and shoes are manufactured in the Akron Goodrich plant than in any other one plant in the world, and the company's products have a world wide distribution.

At a little reunion recently of 25-year men in the Goodyear plant at Akron, Ohio, George Miley, superintendent of Goodyear Hall, received his quarter century service pin, which was fastened to his coat lapel by vice-president C. C. Slusser, himself a member of the same club. Miley is the seventeenth Goodyearite to receive such honors. An award of $250 in gold goes with the pin.

G. C. Gallen is head of the new tire repairing service of the Seiberling Rubber Co., Akron, Ohio, which will inform Seiberling dealers of the latest methods in balloon and bus tire repairing.

The Cleveland Equipment Co., Cleveland, Ohio, is rapidly disposing of factory equipment of the McGraw Tire & Rubber Co., East Palestine, Ohio. Equipment of two other rubber factories also is being sold by this company.

R. E. Winch has resigned as production manager, mechanical goods division, of The B. F. Goodrich Co., Akron, Ohio, after nearly 25 years' service with the company.

During recent months the Lincoln Rubber Co., Akron, Ohio, specializing in the manufacture of surgeons' and household gloves, has been operating with increased production schedule, and plans are now being made to run the plant at full capacity during the coming year. Various improvements have been installed and new forms will be added to facilitate greater production. John Hadfield having sold his interests and resigned as president, the following officers have been elected: William A. Boesche, president; George W. Merz, second vice-president; Frank E. McCoy, vice-president; Allyn R. McCoy, treasurer; and E. E. McNeely, secretary.

Frank Zech, crude rubber broker, has opened an office at 415 Ohio building, Akron, Ohio, under the name of Frank Zech & Co. His New York connection is C. A. Morse & Co., members of the Rubber Exchange of New York.

During the first half of 1926, sales of the Seiberling Rubber Co., Akron, Ohio, increased more than 40 per cent. Business so far this year would indicate sales of $18,000,000 at the end of the year, compared with $10,569,522 in 1925. Daily production is more than 4,000 tires and 5,000 tubes.

With increase in sales of Grasselerator 808, The Grasselli Chemical Co., 347 Madison avenue, New York, N. Y., has found it necessary to erect and equip a larger producing plant at its Cleveland, Ohio, works, and operations will begin at the new factory about September 1. H. H. Replogle is sales manager of the Grasselli organization, and is also in charge of the rubber service department.

A full 24-hour schedule daily is being maintained at the plant of The Akron Rubber Reclaiming Co., Barberton, Ohio, while the output of reclaimed rubber is approximately 25 tons a day. William Welch is vice-president and sales manager.

H. J. Stephens, formerly associated with the Michelin Tire Co., is now in charge of the Cincinnati, Ohio, division of The Cord Tire Corporation, Chester, West Virginia.

The Falls Rubber Co., Cuyahoga Falls, Ohio, celebrated its eighteenth anniversary with the largest sales in its history. Business so far this year has shown an increase of 33⅓ per cent over last year when sales were more than $3,000,000. The company manufactures thick, oversize, inner tubes.

The Firestone Tire & Rubber Co., Akron, Ohio, has just completed a new shipping and warehouse building at Akron, the largest unit in its 1925-26 building program. Containing more than 300,000 feet of floor space, with provision for two additional floors, the building is one of the largest and best equipped in the state.

Two railroad tracks with a capacity of 20 cars each run the entire length of the building and a system of conveyers facilitates loading and unloading. The second and third floors can be reached

Firestone Tire & Rubber Co.'s Warehouse, Akron, Ohio.

from the street by a ramp, the second floor being now in use as a garage. Three bridges connect the building with Plant 1. The conveyer system brings casings and tubes from their respective wrapping and boxing departments direct to the shipping floors, completing the continuous operation from raw material to freight car.

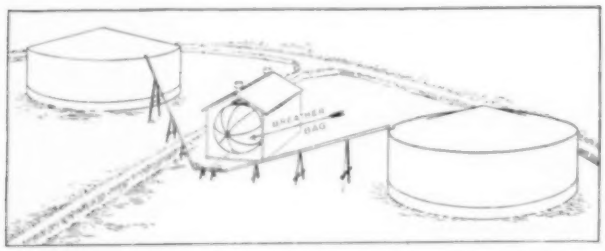
The Rotary Tire & Rubber Co., Zaneville, Ohio, which went into bankruptcy three years ago, has been sold to M. L. Mart, of New York, who will use it for other lines of manufacturing.

Albert H. Johnson, formerly in sales promotion work at Goodyear, is in charge of a new dealers' department at the India Tire & Rubber Co., Akron, Ohio. George Dunlevy has also joined the sales staff of India, covering the Michigan territory.

William Stephens, production superintendent of Goodyear factories, and Harry E. Blythe, superintendent of the Goodyear California company, are on a business trip in Europe.

Goodyear Breather Bags for Oil Tanks

A breather bag is a vapor recovery balloon used in connection with crude oil storage tanks to save evaporation losses. These losses amount to between 6 and 7 per cent of all the oil produced and consist of the lightest and finest gasoline. It is conservatively estimated that $200,000,000 a year is thus dissipated into the atmosphere. All oil tanks are made as vapor tight as possible, but must, however, be provided with vents or "breather" pipes to accommodate the natural expansion and contraction of the oil and particularly of its gaseous contents under varying temperatures.



Breather Bag Installation for High Pitch Roof Tanks

The breather bag is a flexible container in the form of a cylindrical balloon with hemispherical ends. It is kept under suitable pressure and attached to the breather pipe of the tank by a tubular appendix of fabric. The breather bag, like the aerial balloon, is made of fabric coated by rubber machinery but contains no rubber. The solution, or "dope," with which the fabric is made impervious to gasoline vapors, is a patented mixture of gelatine and glycerine. This composition is leathery to touch and quite durable, but not waterproof. The usual dimensions of a bag are 25 feet diameter by 45 feet in length.

The ordinary 120 by 40 foot tank full of gasoline (3,250,000 gallons) unprotected loses by breathing about 250 gallons on an average spring or fall day. This breathing loss is subject to a wide range of variation, depending on the weather and other factors. The saving of this loss by the use of a breather bag is practically complete when the size of the bag is properly proportioned to the vapor space. The bag saves the evaporation loss by receiving and holding the vapors exhaled from the tanks by reason of the temperature increase. As the temperature cools down the vapors are sucked back again into the tank from the bag.

Midwestern Notes

The Vulcanizers Material Co., specializing in the manufacture of pulled tire repair material, recently purchased a factory at 310-312 Winter street, Grand Rapids, Michigan. A. Warsaw is general manager.

John Ziegler has succeeded Oscar Knai as factory manager of the International Rubber Company of America, Anderson, Indiana. Mr. Knai has become associated with the Parkland Tire & Rubber Co., Louisville, Kentucky.

Bert Auerbach, formerly associated with S. Birkenstein & Sons, Inc., is now with the Chicago Scrap Rubber Co., Inc., 214-224 West 20th street, Chicago, Illinois.

The Rubber Trade on the Pacific Coast

The annual golf tournament of leaders in mechanical rubber goods sale and production on the Pacific Coast, will be held in Los Angeles at the Rancho Golf links connected with the Ambassador and Alexandria hotels on September 20 and 21, and will end with a banquet at the Rancho Golf Clubhouse, where the prizes will be awarded. The committee in charge consists of W. C. Hendrie, J. T. Horan, F. M. Beall, and Wm. A. Corder.

Howard Middleton, manager of the Goodyear Rubber Co., 539 Mission street, San Francisco, California, manufacturer of belting and general mechanical rubber goods, is in the east negotiating for new equipment.

The Huntington Rubber Mills, Portland, Oregon, is working sixteen hours a day, and besides heels and soles makes rubber buttons and specialties, a new one being the "Sure-Grip" jar wrench made wholly of rubber. Harry Huntington is president and general manager; C. E. McCulloch, secretary-treasurer; E. S. Bellows, assistant manager and purchasing agent; C. A. Rehor, superintendent.

Horace G. Miller has been appointed sales manager for the branches included in the Pacific Coast division of the Firestone Tire & Rubber Co., Akron, Ohio. Mr. Miller has been associated with the company's export department for several years.

The Durable Mat Co., Inc., 2926 16th avenue, S.W., Seattle, Washington, manufactures a non-skid mat which is being used on steamships, in hotels, restaurants, and other places instead of cocoa fiber matting. The mats are made from discarded cord tires, small blocks or links being punched from the latter and linked with galvanized wire.

Dan A. Kimball, Pacific Coast district manager for the General Tire & Rubber Co., Akron, Ohio, with headquarters in San Francisco, has opened up a factory branch in Phoenix, Arizona, to serve not only the latter state but also New Mexico and western Texas.

The Goodyear Tire & Rubber Co. in Los Angeles is producing close to 6,500 tires daily, and this figure will probably be approximated for the remainder of the year. While production has practically been doubled in six years, the gain has been particularly marked in the past year. The company had an impressive exhibit of rubber and rubber products at the Exposition of Southland Products at the Shrine Auditorium, Los Angeles, during the latter half of August.

The Paragon Rubber Corp., 4827 Huntington Drive, Los Angeles, California, is producing 40,000 pounds of mechancial rubber goods monthly, including tread stock, vulcanizing cements, cushion and sheet gums, gaskets, washers, packings and various molded goods. It has just installed a battery of vulcanizers to cure all sizes of retread jobs done by its customers. The company is going into large scale production of the Nevada cushion tire, and is planning first for a Pacific Coast and then for a nation-wide sales campaign.

The Balloon Tire Mold Co., 3210 South Grand avenue, Los Angeles, California, manufacturers of vulcanizing equipment, has a new manager, Jesse F. Brown, for several years sales manager of the S. & M. Lamp Co., Los Angeles.

The plant of the Cactus Manufacturing Co., 914 East 59th street, Los Angeles, California, was totally destroyed by fire on July 30, production being resumed however about August 15. Another factory to care for the eastern territory is to be established about September 15 at Cincinnati, Ohio. The Cactus organization specializes in the manufacture of tire boots and casing patches.

Sales of tires manufactured by the Columbia Tire Corporation, Portland, Oregon, have shown a steady increase during the first six months of the present year, while during the past two months especially there has been a demand from all sections of the Pacific Coast.

R. P. Thompson, who has become a member of the sales force of The Republic Rubber Co., Youngstown, Ohio, making his headquarters in Portland, Oregon, is well known in the northwest rubber industry.

The Rubber Products Company of America

The Rubber Products Company of America on August 17 celebrated the installation of machinery at its newly-built plant on Riverside-Redondo boulevard at Bates City, California. The first unit costing with its equipment about $200,000 will be used for devulcanizing rubber under the Willard patents, and converting the product into many kinds of rubber goods. The principal product will be battleship linoleum, for which the plant will be equipped to make 5,000 yards a day. W. H. Yetman is president of the new concern.

Executive Changes in California Goodyear

A. F. Osterloh, vice-president and general manager of the Goodyear Tire & Rubber Co. of California and the Goodyear Textile Mills, both of Los Angeles, California, has resigned, and will be succeeded as vice-president by H. E. Blythe, who will also continue as general superintendent. Mr. Osterloh will enter another line of business.

Another executive change in the two Goodyear California companies is the resignation of E. G. Wilmer, chairman of the board of both corporations. The president of both companies is John W. Mapel, who had been treasurer and a director for several years.

The Rubber Trade in Canada

After weeks of rumors of a cut in rubber prices and the final announcement of these lower prices that appeared in this column last month, it seems that business has been somewhat stimulated, and manufacturers believe that the market will become stabilized on the present price basis. It is certainly not likely that still further declines will materialize. Lower prices on garden hose are in order, to bring these commodities in line with the others, but this change is not likely until manufacturers start booking for next spring's business.

At this particular season of the year local wholesale houses report numerous orders for fruit jar rings, the preserving season being well under way, and orders for both white and red rubber rings have been plentiful. In certain districts up until the first of the current month, lawn and garden hose sales were below former years. Since then the seasonable weather has helped dealers to unload fairly large stocks and some sorting orders are now in evidence.

Tennis lines are now well cleaned up, in so far as jobbers are concerned. The demand among retailers for this line has been only fair. Tennis shoes are not particularly popular with the retail trade these days, as one of the lines in which price cutting is severe. Rubber footwear orders for fall are now being shipped. Prices in this line show no change during the past six months.

The Goodyear Tire & Rubber Co., of Canada, Ltd., New Toronto, Ontario, has added the Pathfinder 29 by 4.40 balloon tire and tube to the Goodyear line, which bears the Standard Warranty.

The Goodyear Recreation Club's Sixth Annual Picnic was held last month at Wabasso Park, about thirty miles from New Toronto. Over 2,200 people attended this picnic, which was the largest the Goodyear Tire & Rubber Co. of Canada, Ltd., ever staged.

W. Jackson, who was connected with the Miner Rubber Co., Ltd., for 15 years, is now a member of the sales staff of the Canadian Industrial Coal Co., Ltd.

The champions of the various golf tournaments have been using the Maxfli golf ball manufactured by the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, to win their games. Mr. Briggs, advertising manager of the Dunlop company, says: "What is good enough for champions ought to be good enough for those learning the game."

The Canadian Goodrich Co., Kitchener, Ontario, is marketing two types of Hi-Press fishing and hunting boots called the "Trout King" and the "Dubois."

The thirty-second annual picnic of the Dunlop Tire & Rubber Goods Co., Ltd., Toronto, was recently celebrated at Lakeside Park, Port Dalhousie, Ontario. The program included foot races, bicycle races, a baseball match between the mechanical and tire departments, and a ladies' soft ball match.

Arthur Brittain of Arthur Brittain Sales Co., Ltd., Montreal, has just returned from a business trip. Mr. Brittain is Canadian selling agent for Gates Rubber Co., Denver, Colorado.

R. A. Gunther, formerly manager of the Toronto branch of the Canadian Goodrich Co., Ltd., Kitchener, Ontario, has been promoted to the position of manager in the city of Montreal. S. A. Stafford who was manager in Montreal has been promoted to the head office of the company at Kitchener, Ontario.

In order to accommodate ever increasing business A. H. Fraser & Co., Toronto, and Winnipeg, Manitoba, removed their head office recently to 32 Eastern avenue, Toronto. This firm are selling agents among other lines of Locktite Patch Co., Walkerville, Ontario.

Dr. G. Stafford Whitby, Professor of Organic Chemistry at McGill University, Montreal, will attend the Philadelphia meeting of the American Chemical Society, and read a paper at the Rubber Symposium which is to be a feature of the meeting.

Willard Storage Battery Co., of Canada, Ltd., has been granted concessions authorizing it to acquire land in the Province of Ontario to the value of $72,000.

C. H. Carlisle on Installment Plan

C. H. Carlisle, president and general manager of the Goodyear Tire & Rubber Co. of Canada, Ltd., New Toronto, Ontario, believes it would be difficult to successfully merchandise any high grade or standard tire on the installment plan for the reason that margins of profit to the tire dealer are small and hardly sufficient to show a necessary profit. "Owing to keen competition the margins to the dealers will not likely improve and it is only the dealers who apply good business methods, and have sufficient capital with a large volume of business giving them a rapid turnover, that can make money. In selling tires with a small down payment, the cost of investment during the time of payment, the cost of keeping books and making collections plus a loss on credits that must necessarily take place, seem to put the installment dealer in a position where he cannot make a profit on the same class of goods at the same price as sold by regular dealers."

Canadian Automobile Production

Following the record output of May, Canada's production of automobiles dropped slightly to 21,751 units in June, 1926, and compares with a total production of 24,934 in May, 21,502 in April and 15,429 in June of last year. For the first half of 1926 the cumulative production was 33 per cent above the number made during the same period of 1925, and the value of the cars made, based on selling price, f. o. b. plant was about $16,000,000, or 27 per cent over the selling value of the cars produced in the first six months of last year. This year's output to date included 44,880 open model passenger cars, 51,066 closed passenger cars, 15,973 trucks, 12,860 chassis and 99 taxicabs or buses. The automobile industry in Canada is showing a most remarkable record, which is understood to be due to the lowered tariff with the United States. Sales to date have exceeded those of any previous twelve months.

AMERICAN EXPORTS OF SOLID TIRES HAVE INCREASED FROM A total for the eleven months ended May, 1925, of 92,999 tires, value $2,386,223, to the figure for May, 1926, of 107,369, value $3,548,751.

The Rubber Trade in Europe

Great Britain

THE rubber industry the world over has been interested in learning that the percentage of standard production of rubber which may be exported at the minimum rate of duty from Malaya and Ceylon for the quarter beginning August 1 will be 100, this result due to the increased buying power shown by American interests. The new standard for Malaya is now quoted at 274,000 tons annually, and that for Ceylon at 60,000 tons, the rubber shipments, however, from both countries having averaged during the past quarter only a little above 82 per cent. In a recent editorial *The India-Rubber Journal* (London) says in part:

The actual average price for the quarter under consideration was 1*s* 9.0017*d* per pound, so that the decision depended on a very slight margin. This will be the third successive quarter to which the 100 per cent export allowance has applied or applies. No announcement has yet been made by the Colonial Office as to the average price during the present quarter which will determine next quarter's allowance. It may be a fair assumption that the figure will be the same as that for the quarter just completed, or 1*s* 9*d*, but the absence of any statement leaves room for doubt. . . . If any modification of the Stevenson scheme is under consideration there might be some advantage in altering the restriction quarters to correspond with the usual divisions of the year.

Outlook for Rubber Industry Is Encouraging

Patrick Gow, managing director of Gow, Wilson & Stanton, Ltd., London, on his recent return from a business visit to the United States expressed the opinion that prospects for the rubber industry are very favorable, and that there is plenty of rubber to meet all demands and at a reasonable price. Mr. Gow took an optimistic view of present conditions, and declared that the present outcry against British and Dutch producers was due to the influence of speculation and politics.

The rise in price of rubber was largely due to the element of speculation which entered into it here and abroad, said Mr. Gow, and, like other commodities where futures are dealt in on the market, must have always an important bearing.

I see no reason for a rubber shortage, provided the market is properly handled and growers are assured a reasonable return on the capital invested. In that event growers will always see that an adequate supply of rubber is forthcoming. The recent shortage was really created by the sudden increasing demand of those manufacturing tires and other rubber goods. But the supply was increased to meet the extra demand and will always be more or less regulated by the normal law of supply and demand, as in other things.

Incorporated Society of Planters Holds Annual Dinner

The third annual dinner of the Incorporated Society of Planters (Malaya) was held July 16 at the New Princes' Restaurant, Piccadilly, London, many men of prominence in the rubber industry attending. Mention was made of the passing of Lord Stevenson, and the consequent loss to the rubber trade in general. Sir Frank Swettenham responded to the toast "The Rubber Industry."

Changes in Constitution of I.R.M.A.

The India Rubber Manufacturers' Association, Ltd., during its recent annual session made certain changes in its constitution so that in its working plan it now somewhat resembles that of the Rubber Association of America. Under the new arrangements the British Association, instead of being as in the past divided or grouped geographically, is now divided into sections according to type of manufacturer. In the general committee the following names are included: Sir George Beharrell, new chairman of the Association and managing director of the Dunlop Rubber Co., Ltd.; R. T. Byrne, chairman and managing director of the Leyland & Birmingham Rubber Co., Ltd.; H. C. Coles, director of William Warne & Co., Ltd.; F. W. Hinde, managing director of the Avon India-Rubber Co., Ltd; A. Johnston, managing director of the North British Rubber Co., Ltd.; and Reginald Moseley, governing director of David Moseley & Sons, Ltd.

British Notes

As in previous years the Rubber Growers' Association will participate in displaying various products at the International Shoe and Leather Fair, which this year will be held at the Royal Agricultural Hall, London, from October 4 to 8, 1926. In addition to an exhibit of crêpe-soled footwear, the Association has considered it advisable to have a comprehensive display of the various articles used in connection with the shoe trade, many rubber manufacturers having signfied their intention to cooperate.

The list of exhibitors who plan to participate in the Paris International Rubber Exhibition is steadily increasing. The exposition will be held at the Grand Palais, Paris, France, from January 21 to February 6, 1927.

From July 19 to July 23 the Society of Chemical Industry held its annual meetings, the Institution of the Rubber Industry and other societies cooperating. On July 21 a visit was made to the research laboratory of the British Rubber & Tire Manufacturers, Croydon.

A meeting of the members of the Cab Tire Section of the India Rubber Manufacturers' Association was held July 27 at the Engineers' Club, Coventry street, London, W.1.

A new company, to be known as Insulation Manufacturers, Ltd., Norfolk House, Laurence Pountney Hill, E.C.4, has been formed with a capital of £10,000, which will engage in the production of fireproof rubber solution, dental vulcanite, fireproof celluloid, etc. The organization will also manufacture artificial spread rubber strip, ebonite, etc. The managing director is G. H. Hadder, 201 Widmore Road, Bickley, Kent.

W. Glur & Co., Ltd., was registered July 27, with a nominal capital of £100,000, for the purpose of carrying on business as merchants, agents and factors in crude rubber and kindred products, importers, exporters, etc. The chief incorporator is W. Glur, "The Retreat," Eastcote, Middlesex.

The North Midland Rubber Co., Ltd., is the successor of the organization formerly carrying on business as the North Midland Rubber Co., 33 Nottingham Road, Stapleford, Nottinghamshire. The new company will continue the manufacture of rubber and canvas shoes.

It is understood that the contract for the erection of the new Michelin tire factory at Stoke-on-Trent has been awarded to Peter Lind & Co. and Saxild & Partners, of Westminster. The new plant will be ready for operation within sixteen months.

The Rubber Industry Encouragement Bill was recently passed by the Tasmanian Legislature, this act enabling the Rapson Tire & Jack Co., London, to begin the manufacture of tires in Tasmania.

France

The Michelin Co.

For twenty-five years the French tire market has been dominated by the Michelin Co., which is the largest tire manufacturer in Europe and, despite American and British competition, still controls about 80 per cent of the whole French tire market.

The Michelin Co. was formed in 1863, with a capital of 900,000 francs (then about $180,000), and, after being increased at different

times, was placed at 150,000,000 francs on July 17, 1924 (then about $7,500,000). Before the war, the annual volume of business was estimated at 100,000,000 francs. Its annual business now is estimated at about 1,250,000,000 francs ($37,500,000), about one half of which is understood to represent exports.

The headquarters of the Michelin Company are in Clermont-Ferrand, the Akron of France and indeed of Europe, since the first rubber manufacturers located there. The normal number of employes at present is around 20,000 although during the period of depression in the spring and early summer of this year 5,000 employes were laid off, according to reports. The normal daily output is 10,000 to 12,000 tires and the annual consumption of crude rubber is 25,000 tons.

Last year, the company bought large plantations in French Indo-China and expects to produce 7,000 to 8,000 tons of crude rubber annually.

Wage rates at Clermont-Ferrand are low, averaging 24 francs per day of eight hours for men and 18 francs for women. Piece work employes earn up to 32 francs, and those in the wheel plant, 35 francs.

The Michelin concern is one of the dozen largest industrial enterprises in France. Owned and operated by a single family solidly entrenched through long experience, it started building tires 40 years ago, and by steady conservative growth, it possesses very large resources and is fundamentally sound. However, as we have seen, it too has felt the effect of the depression in France and is said to have between 500 and 600 million francs of tires in stock, from four to six months production. The situation has been brought about by curtailed use of automobiles due to high operating costs, increased retreading of tires and successive price advances culminating in a sudden price cut.

The strength of Michelin, whose specialty is the clincher type tire, is being tried by the increasing demand for straight side tires. However, it is now also offering this type of tire and it is predicted that by 1928 Michelin will be producing straight side tires exclusively in large sizes, although clinchers will be continued for small cars, especially in France. In this the company will be aided by its wheel department where 65 per cent of the automobile wheels used by French manufacturers are made and by means of which Michelin fixes the metric measurements of the tires supplied as original equipment.

France's Tire Business

The unfavorable situation now prevailing is reflected in French tire statistics for the first five months of the year. The considerable drop in exports indicates that the large stocks of tires on hand in factories have not yet begun to move into export markets. The French exports of tires, tubes and solid tires for the first five months of 1926 came to 97,739 quintals, value 420,278,000 francs, against 103,480 quintals, value 308,370,000 francs during the corresponding period of 1925. As will be noted the decline in quantity is more than made up by the increase in value. Imports of tires and tubes were 6,855 quintals, value 25,442,000 francs, against 6,895 quintals, value 11,196,000 francs.

French Rubber Industries

The Etablissements Hutchinson reports a profit of 18,519,000 francs over the past year's working, against 13,700,000 the year before. A dividend of 100 francs per ordinary share (against 70 francs), will be paid out.

Société des Caoutchouc de l'Indochine, is one of the most powerful and prosperous rubber planting companies quoted on the Paris market. The net profits of the concern, which amounted to barely 480,000 francs five years ago, were 6,463,000 in 1924 and almost 25,000,000 francs in 1925. The capital is 12,000,000 francs and the company owns lands in Indo China covering some 10,000 hectares (24,500 acres approximately), of which more than 4,000 hectares are already planted up.

Société des Plantations des Terres Rouges is another important French company operating in Indo China. It has over 14,000 hectares of which probably half has been planted up. In 1925 the profits were 52,283,530 francs against 5,342,087 francs the year before, and a dividend of 125 francs per share is to be paid out against 16.50 francs the year before. The annual output amounted to 1,704 tons against 1,045 tons. The considerable increase is due partly to higher yields and partly to the acquisition of some new plantations, Caoutchouc de Cochinchine, and Plantation de Courtenay et de Camptien.

Germany

The Reclaiming Industry

In its annual report, Runge-Werke A.-G., Spandau, the well-known German rubber reclaimer, reviews the trend of the rubber market during 1925 and ascribes the subsequent fall in prices beginning in 1926, in part at least, to the action of the American authorities who encouraged the use of reclaim. And it is not without some bitterness that it contrasts the behavior of German authorities and German insulated wire and cable associations towards reclaim. The associations, particularly, strongly opposed the use of reclaim in the manufacture of wires and cables and publicly made propaganda against it. Naturally this has not been without effect on the German reclaim business which did not profit from the high prices of crude rubber to the extent it should have done. In addition to this, the raising of the import restrictions, it is claimed, gave rise to considerable dumping, particularly by English firms.

The concern under consideration states that turnover during 1925 increased by 50 per cent, but this was not due to local sales, which actually declined, but to development of foreign trade. Heavy taxes and obligations so far ate into profits that, despite increased business, it was not possible to turn out a dividend for the year.

Anniversary of Hermann Berstorff

On July 14, 1926, Hermann Berstorff, the founder and senior partner of the well-known rubber machinery firm, Hermann Berstorff, Gummibauanstalt, G. m. a. h. Hannover, celebrated his 80th birthday.

Mr. Berstorff was born July 14, 1846, and learned the machinist trade at the Maschinenfabrik Schwartzkopff, Berlin. Serving as an officer in the War of 1870-71, he later became factory manager in a cement works. In 1897 he founded the well-equipped machine factory which has since developed into one of the leading producers of rubber machinery in Germany.

Despite his great age, Mr. Berstorff still takes active part in important discussions and is always interested in up-to-date technical improvements.

Sweden

It seems that the Swedish Cooperative Society intends to manufacture rubber footwear in order to break the monopoly of the four Swedish factories which, protected by a high tariff, obtain higher prices locally than abroad. The net profits of the rubber-shoe cartel amounted to 19,000,000 kronen in the war years and from 1920 to 1924 to some 23,000,000 kronen.

The Trelleborgs Gummifabriks A. B. of Trelleborg is the only firm in Sweden that manufactures sanitary articles. And this is only a side-line, as it produces chiefly clothing, raincoats being its specialty.

During the first six months of 1926 Sweden imported 1,014,882 kilos of crude rubber against 868,304 during the corresponding period of 1925. Among the imports of rubber manufactures were 77,762 kilos of footwear against 71,575 kilos the year before. The total quantity of other rubber goods declined from 1,946,615 to 1,811,900 kilos. Exports of rubber waste fell from 161,531 kilos in the first half of 1925 to 119,358 kilos in 1926; exports of rubber footwear, however, increased by over 50 per cent, the figures for 1925 and 1926 being 48,153 and 72,881 kilos respectively.

The Rubber Trade in the Far East

Ceylon

EXPORTS of rubber from Ceylon totaled 4,546 tons in June, 1926, and 4,508 tons in June, 1925. Of these amounts 4,208 tons and 4,227 tons represented shipments of home grown rubber in 1926 and 1925, respectively. The exportable maximum for June, 1926, was 5,720 tons so that exports during that month fell short 1,512 tons of the amount allowable.

Malaya

The varying feelings aroused here by the continued drop in the price of rubber are well reflected by the utterances of the different local papers.

The *Malaya Tribune* is rather upset by the lower prices and expresses itself with pessimism tinged with a certain amount of nervous violence. "The bottom has fallen out of rubber for the time being. The rapid rise in London stocks, which are mounting to a dangerously uncomfortable figure, show a tendency to increase which must persist for as long as the manufacturers are able to hold off. Restriction was removed too soon and there has been a decided lack of caution on the part of the producer

"Without the faintest shadow of a doubt the bear manipulation of the past two or three months has not only succeeded in its primary object, namely, the reduction of prices to a level at which manufacturers feel disposed to buy, but has made it essential that the return to restricted output be made without delay. The market cannot be left in the hands of gamblers." The contemplation of the evil caused by gamblers and speculators lead it to suggest that the Colonial Government should as soon as possible introduce legislation to prevent paper sales in the local market. Rubber should be one of the least speculative of industries. At the present time it is about the most dangerous investment a man can make.

The *Malay Mail*, on the other hand, finds there is nothing to worry about the present situation. Producers can still work at a profit and the prices prevailing act as a corrective of the artificial bloating of prices during the last half of 1925. It finds that manufacturers are playing the same game that cost them so heavily last year. The present price, too, tends to make the producer carry voluntarily the stocks which consumers refuse to do, which is all to the good. However, in the end, the paper refers to the Central Selling Scheme which the sudden spurt in rubber prices left behind, and hints that it may well be brought to the fore again. It finds that sellers are quietly combining to counteract the bearing by consumers, and if sellers act in that way about the matter there is not much to fear for the future.

The *Straits Times* takes the matter even more cheerfully, because it has always viewed the boom with disfavor, considering it premature. The prevailing prices are nearer the ideal figure for rubber—*2s 3d* to *2s 6d*. It sees signs that manufacturers are realizing the equally injurious effects of slump and boom to their own cause and once this realization gains ground, buyer and seller will be getting closer together for their mutual benefit.

Finally, contrary to the *Malaya Tribune*, it finds rubber becoming "a sounder investment than Home railways which late Victorians always regarded as second only to Consols."

Malayan Statistics

Total exports of rubber from Malaya during the first six months of 1926 came to 181,487.84 tons, value $398,216,000 (Straits currency) against 144,616.76 tons, value $228,434,000 in 1925, an increase in quantity of 36,871.08 tons and in value of $169,782,000, in other words an increase of 25 per cent in quantity and 75 per cent in value. During the same periods native rubber imports were 66,277.58 tons and 73,036.80 tons, respectively, showing a decrease for 1926 amounting to 6,759.22 tons. This is regarded by many to indicate that Dutch native outputs have passed their peak and are now dropping somewhat, partly due to lower prices but chiefly to lessened capacity owing to previous overtapping. No doubt the decrease in output is partly to be ascribed to the above reasons, but smuggling has been going on in the years just preceding and in view of the amounts actually captured by the preventive fleet it is safe to say that thousands of tons of rubber that came into Malaya as Dutch native rubber were really native Malayan rubber.

The controller of rubber has issued detailed statistics for May, 1926, including the "carry over" to June. This "carry over" however is only for the Federated Malay States and Johore, as owing to changes in assessment of small holdings, the amount for the whole of Malaya can not be supplied. The figures given are:

	Federated Malay States Tons	Johore Tons
Carry over from April, 1926	9,346	4,021
Amount exportable May, 1926	41,300	15,167
	50,646	19,188
Total exported in May	14,428	5,458
Carry over to June	36,218	13,730

Netherlands East Indies

The Rubber Factory Ordinance

The proposed Rubber Factory Ordinance, however welcome to those who desire its protection that insures freedom from undesireable competition, is not looked upon with universal favor. Thus the Commercial Association of Palembang (Sumatra) wired a protest to the Governor General and requested that the ruling should not be put through until the president of the association had been granted an audience in order to present its case. The reply was that the ruling could not be delayed since it was of general interest for which local trade interests had to make place; audience was not granted.

The Molukssche Handelsvennootschap was the first firm in Palembang which began a factory on a small scale at great cost. In Djambi there are two factories, owned by Chinese. Up to the present, the Palembang factory earns nothing, chiefly due to the latest drop in the price of rubber, in fact at present it operates at a loss. But after dearly bought experience the firm has arrived at a stage where, under normal circumstances, they will possess a profit-bearing business. To this end, the concern is working on plans for expansion, for the greater the output, the lower the cost of production. Now the ordinance empowers the government to prevent this expansion if it thinks fit, for which reason the government reply, quoted above, is anything but agreeable.

While on this subject it may be worth while quoting the opinion of a well-known authority, Mr. Helfferich, with regard to the plans of the body formed to remill native rubber, the Netherlands Rubber Union. He considers that this union might be confronted with similar difficulties as the Insulinde Oil Mills eventually had to face.

The greatest mistake made by these oil mills was that the factory was held to be the main consideration, whereas it was only of secondary importance in a highly speculative venture. This is still more the case with factories for preparing native rubber. They are the most primitive works imaginable. The cost of preparation is only a few cents per kilo. The factory occupies

a very subordinate place in the enterprise in which the main factors are the buying and selling of the product.

This has to a certain extent been realized by those concerned. But the remedy found for this—the ordinance which creates special working conditions for the factories—is, in Mr. Helfferich's opinion, the wrong one. It is an obstacle to economic liberty which is indefensible and it has brought nationalistic tendencies to the fore which are diametrically opposed to the well-tried open-door policy.

Finally it is not in the best interest of the native whose chance of obtaining the best possible price is thereby thwarted.

Plans of the Rubber Union

Now that the Rubber Factory Ordinance has been passed and the government is expected to put it into effect as soon as possible, the *Java Bode* has thought it well to interview one of the officials, Mr. Römer, to find out the plans of the syndicate. It is thus learned that the union has decided to carry out its provisional plans which provide for the erection of four factories, one each in Djambi, Palembang (Sumatra), Pontianak and Banjermassin (Borneo). The syndicate will first have to investigate the present exports and the capacities of the factories to be built. Then there will be a delay for government licenses, which will take time as the already existing factories will have to be taken into consideration. This applies particularly to Borneo where several factories of considerable capacity already exist and some trouble here is looked for.

Since it is the avowed plan of the Rubber Union to break the Singapore monopoly in the matter of remilling native rubber and since it is the desire of the Dutch Government to establish this industry in the Dutch colonies, the report that the well-known Singapore Chinese Tan Ka Kee intends in great part to transfer his factories for treating native rubber to Banjermassin, is of peculiar interest. It seems he also plans to establish a factory at Palembang.

The Practical Value of Concentrating Latex

A recent issue of the *Indische Mercuur* publishes some remarks by J. G. Fol on the practical value of processes for concentrating latex. The judgment of the practical value of such a process must cover possibility of carrying it out on the estate, qualities of the rubber in the concentrated latex and suitability of this latex for technical purposes and finally, a calculation of packing costs chiefly in comparison with ammoniated latex in bulk.

Mr. Fol limits himself chiefly to the last item, that of packing, although he points out that a consideration in latex condensation processes is whether, besides the concentrated latex, a latex with low rubber content, a waste latex as it were, is formed which has to be coagulated and worked in the usual way. This would be a distinct disadvantage as an estate would have to have two methods of procedure, the old and the new. Besides this, as ammonia was added to the latex an extra amount of acetic acid would be required to make it coagulate, which would increase the cost of manufacture, to say nothing of the effect of all this on the inner properties of the finished rubber.

Another point to be considered is whether concentrated latex can be shipped in bulk. Beyond a certain stage of concentration its viscosity becomes such that it cannot be pumped and would have to be packed in barrels or cases. There are two disadvantages here; first, the gain in space through greater degree of concentration is offset by the loss in space due to the necessity for packing, and second, the packing itself becomes an item of added expense which could more than nullify any advantages concentrated latex might have over ordinary latex shipped in bulk. Thus it is calculated that, granted that the concentrate could be packed in cases, the yield from 1,000 liters, concentrated to 75 per cent, would be 467 kilos of paste requiring more than four cases for packing. The four cases would cost nearly 10 guilders. Against this the saving in space would mean a saving of about 9 guilders per 1,000 liters for freightage; that is the saving is completely wiped out. However, where latex can only be shipped on a small scale, and so would have to be packed in good barrels, the chances for concentrated latex are more favorable.

Rejuvenation of Old Rubber Areas

In a recent number of the *Algemeen Landbouwweekblad voor Nederlandsch-Indie* appears a short but stimulating article by C. M. Hamaker on the future of old rubber areas and their rejuvenation.

He begins by calling attention to certain new factors in rubber production. First, it has been found that young plantings from selected seed begun after 1915 show a much higher output in comparison with the old estates. Another point, in the opinion of the writer, is the still greater productivity of the small areas of bud-grafted trees. The success in this direction, he is convinced, only requires a little time to develop into a universally adopted method of doubling or quadrupling the output.

Finally, the findings regarding native rubber which shows, according to Dr. Rutgers, possibilities of reaching 150,000 tons of dry rubber in 1930, should not be overlooked. In fact, the estimates probably err by being too low rather than too high, especially when it is considered that Java has also entered the lists as producer of native rubber.

Considering the enormous amount of planting done during the recent period of high prices together with the interest of the Government in protecting the native producers of such an important staple, in addition to the interest of European capitalists in the native product as material for remilling factories, the writer deems it sensible to figure on the product from native sources reaching 200,000 tons within the next ten years, a product that it pays to produce so long as the price is above 60 guilder cents per kilo.

In view of this the writer asks what is to become of all the old areas which will become superfluous when the world demands will be satisfied by native rubber and rubber from the highly productive young areas described above. These are possibilities that have to be faced and prepared against by rejuvenating old areas. This is done by reducing the number of trees per bouw on old washed out or otherwise spoiled areas to 60 and replanting with selected seed or bud grafts in big holes filled with good earth, and then planting suitable cover crops.

Mr. Hamaker made a first test on a small scale and on the basis of this treated an area of 70 bouws in the above manner in 1924. Besides this, since 1917 an old plantation has been regularly cleared of inferior trees and replanted with superior material.

On the basis of his experience he states that on an area where more than 100 trees of over 10 years are found to the bouw, if the number is reduced to 100 trees by taking away all the poorest producers, the output over the year will show no decrease at all.

If there are 100 trees per bouw and 20 per cent are removed, some loss is possible the first year according to the quality of the trees removed, but this loss is made good by the second year. Where 100 to 70 trees per bouw are found, if not more than 50 per cent of the trees, and these the poorest, are taken out, the loss will not be more than 50 per cent and will decrease from year to year. He adds that ideal conditions, of course, may give somewhat different results.

PRESS DISPATCHES REFER TO NEGOTIATIONS OF THE KANE-GAFUCHI Spinnig Co. (Japan) with the authorities of Amazonas and Pará in connection with a scheme for colonizing the upper Amazon projected by the Japanese concern. No location has as yet been selected. It is further reported that an American automobile company is looking over the Amazon territory with a view to planting rubber and would be inclined to employ Japanese labor, thus cooperating with the scheme of the Japanese concern.

Rubber Patents, Trade Marks and Designs

The United States

July 13, 1926*

1,591,982 Demountable cushion tire. William R. Kirkwood, Phoenix, Arizona.

1,592,110 Rubber footwear article. Frank A. Joseph, New Haven, Connecticut, assignor to L. Candee & Co., a corporation of Connecticut.

1,592,570 Tank valve. Florain J. Shook, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,592,607 Tire valve. Manuel Lemos, New York, N. Y.

July 20, 1926*

1,592,839 Heel. Louis S. Siegfried, Brooklyn, New York.

1,592,958 Tire. Max Cyrus Overman, New York, N. Y.

1,592,959 Tire. Max Cyrus Overman, New York, N. Y.

1,593,009 Packing. Frank Robinson Bigler, Kansas City, Missouri.

1,593,025 Tube closure. Frederick L. MacDonald, Waltham, Massachusetts.

1,593,120 Eraser mounting. Byron B. Goldsmith, New York, N. Y.

1,593,140 Reducing girdle. Michael J. Reynolds, West Haven, assignor to Strouse, Alder & Co., New Haven, both in Connecicut.

1,593,216 Eye strap. Florence N. Lewis, New York, N. Y.

1,593,238 Molded wheel device. Albert H. Basler, Cleveland, Ohio.

1,593,240 Muted reed sound making device. William Caldwell, New York, N. Y.

1,593,313 Tire valve. Lloyd B. Solemink, San Francisco, California.

1,593,318 Tire pressure gage. William Trewhella, Trentham, Victoria, Australia.

1,593,325 Composite packing element. Harry N. Atwood, Smithfield, North Carolina, assignor to Rubwood, Inc., Lawrence, Massachusetts.

1,593,327 Garter. John Callan, Jerome, Arizona.

1,593,368 Water bag. Purcell C. Steinmetz and Charles R. Elliott, said Steinmetz assignor to Variety Rubber Co., all of San Francisco, California.

1,593,453 Play ring. Ralph C. Hinsen, Timpas, Colorado.

1,593,456 Elastic strip for necktie. Clarence Johnson, Kendallville, Indiana.

July 27, 1926*

1,593,631 Pajama trouser waist band. George M. Harsh, Baltimore, Maryland.

1,593,751 Pulley cover. Andrew G. Carter, Grand Rapids, Michigan.

1,593,805 Pneumatic tire air valve. Thomas C. Mahon and Edward M. Le Flufy, Vancouver, British Columbia, Canada.

1,593,832 Douche. Rosa Mae Larson, assignor to Theodore H. Larson, both of Chicago, Illinois.

1,593,889 Bathing shoe. Edna Sanguinet Ward, Fort Worth, Texas.

1,593,915 Detachable heel. Henry Ringler and Hans Wilkins, Fittsburgh, Pennsylvania.

1,594,005 Detachable heel. August G. Eichhorn, St. Louis, Missouri.

1,594,031 Tire repair tool. Edward O. Young, Cleveland Heights, Ohio.

1,594,102 Pneumatic tire. Frederick A. Krusemark, Akron, assignor to Lambert Tire & Rubber Co., Barberton, both in Ohio.

1,594,174 Football helmet. Henry Ridgeway Hart, Montclair, New Jersey.

1,594,206 Hair retainer. Andrew S. Knapp, Kansas City, Missouri.

August 3, 1926*

1,594,386 Indicating valve stem. Kenneth Barton Stuart, Colorado Springs, Colorado.

1,594,431 Device for printing names on golf balls. John Thomson, Milngavie, Scotland.

1,594,479 Amusement device. Peter J. Swofford, Denver, Colorado.

1,594,612 Insulating tape. William R. Gillies, assignor to Union Asbestos & Rubber Co., both of Chicago, Illinois.

1,594,667 Foot mat. Robert M. Dick, Vancouver, British Columbia, Canada.

1,594,746 Artificial flowers. Doris Sophie Munn, Gourock, Scotland.

1,594,763 Pressure gage. John Wall and Otto Melzer, assignors to A. Schrader's Son, Inc., all of Brooklyn, New York.

1,594,924 Vehicle tire filler. James W. Brown, Tulsa, Oklahoma.

1,594,956 Vehicle tire. William Honsberger, Buffalo, New York.

1,594,962 Garter. Daniel Bradford Jacobs, Swan Valley, Idaho.

1,594,989 Tobacco pouch. Louis and Marie Auster, New York, N. Y.

1,594,993 Tire pressure gage. Clate D. Bedford, Beaumont, Texas.

1,595,010 Tire. Victor Lindholm, San Francisco, California.

The Dominion of Canada

July 13, 1926

262,569 Music reading device. Curt B. Schoelzka, Winnipeg, Manitoba.

262,626 Fabric. The Duratex Corporation, assignee of Paul S. Smith, both of Newark, New Jersey, U. S. A.

July 20, 1926

262,791 Cycle pedal. The Canada Cycle & Motor Co., Ltd., Weston, assignee of Harvey Wekk Peace, Toronto, both in Ontario.

262,802 Wheel rim. The Dunlop Rubber Co., Ltd., Regent's Park, County of London, assignee of John Thomas Turney Randles, Birmingham, County of Warwick, both in England.

262,834 Heel. The United Shoe Machinery Co. of Canada, Ltd., Montreal, Quebec, assignee of George Elmer Warren, Swampscott, Massachusetts, U. S. A.

July 27, 1926

262,942 Brassière. Florence M. Stanley, St. Joseph, Missouri, U. S. A.

263,008 Heel. The Goodyear Tire & Rubber Co., assignee of Herman Edward Morse, both of Akron, Ohio, U. S. A.

263,009 Air valve stem. The Goodyear Tire & Rubber Co., assignee of James Ellis Hale, both of Akron, Ohio, U. S. A.

August 3, 1926

263,082 Tire. Thomas Percy Douglas, Marshall, and Joshua Hirst, Wingham, Ontario.

263,106 Tire inflating mechanism. William Gordon, Cumming, Montreal, Quebec.

263,113 Elastic band gun. Fred C. Ecker, Topeka, Kansas, U. S. A.

263,122 Golf club. Paul E. Heller, Newark, New Jersey, U. S. A.

263,131 Tire. Edward Brice Killen, London, E. C. 4, England.

263,132 Cushion tire. Edward Brice Killen, London, E. C. 4, England.

263,200 Tread attachment. The Durkee Atwood Co., Minneapolis, assignee of The Barth Manufacturing Co., St. Paul, assignee of Luther B. Barth, St. Paul, all in Minnesota, U. S. A.

The United Kingdom

July 7, 1926

251,276* Bottle stoppers. Metallwerk Wasungen Ges., Wasungen, Thüringen, Germany.

251,343 Floor covering underlay. N. C. Harbutt, Ikaya, Bathampton, Bath.

251,372 Air cushions. D. Moseley & Sons, Ltd., and A. H. C. Randall, Chapel Field Works, Ardwick, Manchester.

251,394 Surgical trusses. A. J. Bonnick, 95, Humber avenue, Coventry.

251,473 Reservoir pen. A. Pennington, 15, Murdock street, Edge Hill, Liverpool.

251,490 Pedestal with rubber mat. J. S. Bailey, 21, Bowling Green Lane, Farringdon Road, London.

251,507 Footballs, basketballs, etc. A. G. Stalding & Brothers, Ltd., 317, High Holbern, London (W. W. MacDonald, 183 Nonotuck avenue, Chicopee, Massachusetts, U. S. A.).

251,520 Shock absorber. A. Bennett, Chilliwack, British Columbia, Canada.

251,586* Bookmarker. Preck & Co., Ges., 22 Zietenstrasse, assignee of O. Nieder, 44 Hauptstrasse, both in Berlin, Germany.

July 14, 1926

251,709 Brake band lining. B. Thomas, 629, Bearwood Road, Bearwood, Birmingham.

251,734 Brushes. E. A. Cloud and New Power Saver Co., Ltd., Graham Works, Graham Road, Wimbledon, London.

251,880 Tire. W. G. Cumming, 349, Beaconsfield avenue, Montreal, Canada.

251,915 Heel tip. W. Fletcher and J. W. Simpson, 10, Tachbrook street, London.

252,002* Loud speaker diaphragm. Soc. Des Etablissements Gaumont, 57 Rue St. Roch, Paris, France.

252,035 Universal joints, etc. O. Y. Imray, 30, Southampton Buildings, London (International Motor Co., 25 Broadway, New York, N. Y., U. S. A.).

July 21, 1926

252,086 Spring surface. I. G. Mitchell, 20, Victoria Gardens, and W. Leslie, 2, Wellington Place, both in Belfast, Ireland.

252,131* Rubber springs. R. M. Lovejoy, 39 Brighton avenue, Boston, Massachusetts, U. S. A.

252,161* Cushion heel. United Shoe Machinery Corporation, 205, Lincoln street, Boston, assignee of J. B. Hadaway, Swampscott, both in Massachusetts, U. S. A.

252,248 Hot water bottle. W. R. Beldam, Eastwinch, Devonshire Road, Sutton, Surrey.

252,293 Tennis racket protector. F. G. Collis, 6, Southwark street, Southwark, London.

252,296 Inflatable toy hats. H. Brooker, Brooklands, Station Road, Laindon, Essex.

July 28, 1926

252,366* Pipe joints. Elektrochemische Werke Munchen, Dr. A. Pietzsch & Co., Hollriegelskreuth, and B. Redlich Feldkirchen, both near Munich, Germany.

*Not yet accepted.

*Under Rule No. 167 of the United State Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

Chemical patents will be found on page 329. Machinery and Process Patents on pages 335-336.

252,443 Valve. J. Stone & Co., Ltd., Deptford, and A. E. Honey, 31, Seymour Gardens, Ilford, both in London.

252,529 Universal joints. Watts Couplings, Ltd., and H. C. Kedwards, 15 Summer Row, Birmingham.

252,530 Packing case. General Electric Co., Ltd., Magnet House, Kingsway, London, and B. S. Gossling, General Electric Co.'s Research Laboratories, North Wembley, Middlesex.

252,628 Vehicle window frame. H. Perks, Laventie, Tile Hill Lane, near Coventry.

252,638 Seat bottoms. W. J. Thomson, 29, East Fountainbridge, Edinburgh.

252,653 Slaughtering pistol employing rubber cushion. R. Temple, 38, London Road, Bromley, Kent, and Temple Cox Research Co., Ltd., Dacre House, Dean Farrar street, Victoria street, Westminster.

252,682* Cable joint casing. Felten & Guilleaume Carlswerk Akt.-Ges., Mülheim, Cologne, Germany.

* Not yet accepted.

Germany

431,338 (December 2, 1924). Elastic clothing material with rubber insert, particularly corsets. Jules Lindauer, Paris. Represented by R. H. Korn, Berlin S. W. 11.

431,467 (July 18, 1925). Rubber tread patch. Friedrich W. Linde, Schulstrasse 3, Wandshek.

Trade Marks

The United States

Two Kinds of Trademarks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

July 13, 1926, Act of February 20, 1905

215,239 Representation of a golfer writing his score—golf balls, etc. Hillerich & Bradsby Co., Louisville, Kentucky.

215,294 ATLAS—raw and partly prepared rubber. Henry Gardner & Co., Ltd., London, England.

215,296 TYL-A-MAT—floor mats. O. W. Jackson & Co., Inc., New York, N. Y.

215,299 The word: CHUMLEY enclosed in an oblong—gloves of leather, fabric and rubber, etc. Charles F. Berg, Portland, Oregon.

July 13, 1926, Act of March 19, 1920

215,350 The words: "MOORE," "PRODUCTS" and "MERRITT"—oles and heels. The Moore-Merritt Rubber Co., Alton Park, Chattanooga, Tennessee.

215,364 TUFFWARE—shoes of leather, rubber, etc. H. Jacob & Sons, Inc., Brooklyn, New York.

215,370 STANDARD—tires. The Gates Rubber Co., Denver, Colorado.

215,380 WOLFELT MODELS—shoes of leather, rubber, fabric, etc. Curt Wolfelt, Inc., New York, N. Y.

July 20, 1926, Act of February 20, 1905

215,407 Representation of a store over the door of which are the words: "SHOE BOX"—shoes of leather, rubber, fabric, etc. Abraham Breslau, Baltimore, Maryland.

215,465 UTE—rubber bands, erasers, paper, etc. The Scoville Paper Co., Ogden, Utah.

215,517 Double triangle enclosing the words: RUBBER SERVICE LABORATORIES; across the bottom of the inner triangle the word: TACKOL—compounding ingredient and rubber softener. The Rubber Service Laboratories Co., Akron, Ohio.

215,563 LO-SKORE—golf balls, clubs, etc. Hillerich & Bradsby Co., Louisville, Kentucky.

215,613 DURA-BILT—shoes. American Wholesale Corporation (Baltimore Bargain House), Baltimore, Maryland.

215,617 Representation of a clerk fitting a pair of shoes on a customer—boots, shoes and slippers of leather, rubber, fabric, etc. Scholl Manufacturing Co., Inc., Chicago, Illinois.

215,661 AFFILIATED CLOTHIERS, the first and last letters of the word: "AFFILIATED" lengthened to enclose the word: "CLOTHIERS"—raincoats, gloves of leather, rubber, fabric, etc. Affiliated Clothiers, Inc., New York, N. Y.

215,664 WHIZ—leather and rubber boots and shoes. Endicott Johnson Corporation, Endicott, New York.

July 20, 1926, Act of March 19, 1920

215,678 Triangle enclosing the words: "WISE SHOE ONE PRICE $6 WORTH MORE"—shoes of leather, rubber, fabric, etc. Wise Shoes Inc., New York, N. Y.

215,703 ACE-PROFESSIONAL—hard rubber combs. American Hard Rubber Co., Hempstead and New York, N. Y.

July 27, 1926, Act of February 20, 1905

215,721 GALACITE—puncture seal for tires. Charles F. Johnson, doing business as Charles F. Johnson & Co., Chicago, Illinois.

215,732 "INSTO"—composition for repairing punctured tires. Insto Puncture-Proof Tire Equipment Co., Seattle, Washington.

215,736 The words: DESERT DRY, a representation of a desert scene enclosed in the first letter, the last letter ending in a pennant which contains the word: RAINCOATS—raincoats. Louis Shulman, doing business as The Burlington Co., Philadelphia, Pennsylvania.

215,897 BULL DOG—heels. Boston Woven Hose & Rubber Co., Cambridge, Massachusetts.

July 27, 1926, Act of March 19, 1920

215,943 Double circles containing the word: KNIT, superimposed across the circles the word: SUPERIOR—rubber gloves, etc. Appleton Superior Knitting Works, Appleton, Wisconsin.

215,945 DEPENDABLE—tires. The Dayton Rubber Manufacturing Co., Dayton, Ohio.

215,949 HEVI-BURDEN—tires. Steinbrenner Rubber Co., Noblesville, Indiana.

August 3, 1926, Act of February 20, 1905

216,029 BUCKEYE—hoof pads. Dryden Rubber Co., Chicago, Illinois.

The Dominion of Canada

Registered

July 13, 1926

40,120 Word: "DORCO"—toys, particularly inflatable rubber toys and balls. Dr. Dorogi & Co. Rubber Goods Factory, Ltd., 50 Albertfalva, Budapest, Hungary.

40,128 Representation of a mediaeval herald wearing a tabard on which appears the letter: "B" in modified old English type; in his left hand the herald supports a lance bearing a banner on which appear the words: "MARKE BLEYLE GES. GESCH."—suspenders, braces, corsets, etc. Wilh. Bleyle, G.m.b.H., Rotebühlstrasse 120, Stuttgart, Württemberg, Germany.

July 20, 1926

40,155 Words: "GOLD SEAL"—garters, armbands, elastics, etc. Isidor Goldberg, trading as National Garter Co., New York, N. Y., U. S. A.

July 27, 1926

40,196 Monogram formed by writing one letter "W" over another letter "W" and linking the two letters together—surgical goods, tobacco pouches, football bladders, etc. William Warne & Co., Ltd., 29, Gresham street, London, England.

The United Kingdom

July 7, 1926

465,244 PYRAMID—surgical bandages. Joseph Burgess & Son, Ltd., 12, Brougham street, Leicester.

468,321 The word: TENGO, the letter G lengthened to contain the words: KEEPS MATS IN THEIR PLACE—non-slipping preparation for mats. Ernest Thomas Fielding, trading as Fielding & Co., 32, Shaftesbury avenue, London, W. 1.

469,024 NORDAC—rubber mixtures. Norman Swindin, 4, Heathfield Road, Mill Hill Park, Acton, London, W. 3.

469,456 EBONART—rubber goods. Redfern's Rubber Works, Ltd., Dawson street, and Springbank street, Hyde, near Manchester.

July 14, 1926

470,559 THERMOLECTRA—rubber goods. G. W. Thornton & Co., Ltd., 5, Blackfriars street, Salford, Manchester.

July 21, 1926

469,272 SUPRIMUS—hot water bottles. Miller & Ferguson, Ltd., Kenmure Works, Stuart Drive, Bishopbriggs, Glasgow.

469,755 ADHÉRITE—member of elastic material used in joint devices applicable to buffers, springs, etc. Société Anonyme Des Établissements Repusseau & Cie, 75 Rue Danton, Levallois-Perret, Seine, France (Marks & Clerk, 57 Lincoln's inn Fields, London, W. C. 2).

July 28, 1926

468,127 VICEROY—bands and erasers. The Canadian I. T. S. Rubber Co., Ltd., 26 Alpine avenue, West, Toronto, Ontario, Canada (Marks & Clerk, 57 Lincoln's Inn Fields, London, W. C. 2).

470,255 FIRE-FLY—tennis and golf balls, etc. Adams Montgomery & Co., Ltd., 2, Dyers Buildings, Holborn, London, E. C. 1.

Designs

The United States

70,529 Hip boot. Term 14 years. Edgar S. Bott and Arthur S. Funk, assignors to La Crosse Rubber Mills Co., all of La Crosse, Wisconsin.

70,537 Tire. Term 14 years. Jackson D. Comstock, Chester, West Virginia.

70,538 Tire. Term 14 years. Jackson D. Comstock, Chester, West Virginia.

70,781 Tire. Term 14 years. John Vrbanac, Milwaukee, Wisconsin, assignor to Simmons Hardware Co., a corporation of Missouri.

Designs

The Dominion of Canada

7,205 Tire. Dominion Rubber Co., Ltd., Montreal, Quebec.
7,206 Tire. Dominion Rubber Co., Ltd., Montreal, Quebec.
7,207 Tire. Dominion Rubber Co., Ltd., Montreal, Quebec.
7,212 Golf ball. Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ontario.
7,240 Tire. Dominion Rubber Co., Ltd., Montreal, Quebec.

Germany

951,834 (May 1, 1926). Rubber swimming suit. Stanislaus Wagner, Schöneberger Ufer 17, Berlin.

951,835 (May 3, 1926). Balloon with decorations of colored sponge rubber. Belinde Werke A.-G., Hamburg.

951,924 (May 15, 1926). Rubber weatherproof coat. Louis Saupe, Eichhornstrasse 24, Wurzburg.

952,231 (April 9, 1926). Artificial silk knitted fabric with rubberized surface. Heinrich Kretzschmar, Burkersdorf, bei Burgstädt, i. S.

952,300 (April 15, 1926). Inflatable rubber figure. Fritz Loeschigk, Heitmannstrasse 71, Hamburg.

952,422 (November 1, 1924). Rubber ball. The Dunlop Rubber Co., Ltd., London. Represented by: Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, Frankfurt-am-Main, and T. R. Koehnhorn, E. Noll, Berlin S. W. 11.

952,648 (May 27, 1926). Joker article of rubber. Karl Erwin Martin, Oeserstrasse 23, Leipzig-Schleussig.

952,699 (May 19, 1926). Rubber loop bast and thread holder. Hermann Mentel Sohn, Ostdlinburg.

952,727 (April 9, 1926). Combined cuvette and rubber beater. Oskar Metdorff, Heltropwall 21, Dortmund.

953,038 (May 29, 1926). Smooth rubber electrical heating pad. Johannes Ochler & Co., Nordhausen A. H.

953,106 (June 12, 1926). Lined sporting glove of rubberized fabric. Georg Zeidler, Schatzlar, Czecho Slovakian Republic. Represented by A. Schneider, Grossgörschen Strasse 31, Berlin.

953,127 (April 28, 1926). Cleaner with sponge rubber piston. Theresia Bealas, née Otto, Hildesheimer Strasse 205 and August Elbinghausen, Siebstrasse 3, Hannover.

953,219 (May 14, 1926). Rubber spats. Friedrich Michel, Bulowstrasse 75, Berlin.

953,224 (May 19, 1926). Exchangeable garment protector. Margarethe Fröhner, née Marquardt, Oberlindau 108, Frankfurt a. M.

953,276 (April 28, 1926). Elastic rubber head covering. H. G. Grote G. m. b. H., Barmen-U.

953,847 (May 6, 1926). Rubber bulb for sucking up secretions. Berta Niebusch, née Slawik, Ohlaunfer 41, Breslau.

953,917 (May 10, 1926). Dice cup and dice of rubber. Wilhelm Coorssen, Lesumbroker Landstrasse 22, Bremen-Burg.

954,030 (June 21, 1926). Protective covering for hats of thin sheet rubber. Ludwig Bernhardt, GrünerWeg 22, Kassel.

954,071 (May 28, 1926). Rubber fermenting bung. Heinrich Jager, Islanstrasse 16, Berlin.

954,100 (June 9, 1926). Stiffened rubber erasing disk. Karl Reichenbach, Klauprechtstrasse 5, Karlsuhe i. B.

954,260 (January 2, 1926). Handle, with elastic rubber cushions, for bicycles and motor cycles. Wilhelm Hess, Jena.

954,358 (June 1, 1926). Inflatable rubber globe with covering. A. P. Richard Verwarrn, Richterstrasse 46, Berlin-Mariendorf.

954,385 (June 10, 1926). Rubber ball spray with ball valve. Hugo Tüchsen, Nassauische-Strasse 46, Berlin-Wilmersdorf.

954,646 (June 10, 1926). Rubber conduit with metal sheath. Felten & Guilleaume Carlswerk A.-G., Köln-Mülheim.

954,765 (May 15, 1926). Fruit jar ring. Berthold Ulbrich, Friedmersheim a. Niederrh.

954,890 (June 4, 1926). Rubber coat with exchangeable collar. Albert Berghausen, Piusstrasse 26, and Maria Müller, Burgunder strasse 8, Cologne.

954,994 (June 14, 1926). Printed rubber figure. J. Paul Listner, Seestrasse 19, Plauen i. V.

Prints

The United States

8,958 GOOD-WINGFOOT-YEAR-TRUCK TIRES—GOOD WEAR TIRES. The Goodyear Tire & Rubber Co., Inc., Akron, Ohio. Published May 15, 1925.

8,959 GOOD WEAR-GOOD-WINGFOOT-YEAR-TRUCK TIRES. Tires. The Goodyear Tire & Rubber Co., Inc., Akron, Ohio. Published April 15, 1926.

8,970 MADE EXPRESSLY FOR CADILLAC. Tires. Ajax Rubber Co., Inc., New York, N. Y. Published May 27, 1926.

8,971 MADE EXPRESSLY FOR BUICK. Tires. Ajax Rubber Co., Inc., New York, N. Y. Published April 1, 1926.

8,972 MADE EXPRESSLY FOR PONTIAC. Tires. Ajax Rubber Co., Inc., New York, N. Y. Published May 6, 1926.

9,009 MADE EXPRESSLY FOR OAKLAND. Tires. Ajax Rubber Co., Inc., New York, N. Y. Published April 22, 1926.

9,010 MADE EXPRESSLY FOR DODGE BROTHERS. Tires. Ajax Rubber Co., Inc., New York, N. Y. Published April 8, 1926.

9,016 YOU FLATTEN 'EM WE FATTEN 'EM. Tires. Feirman Tire Vulcanizing Co., Inc., Bronx, New York. Published April 10, 1926.

9,043 HERE COMES HELP.. Tires. Prior Tire Co., Atlanta, Georgia. Published March 21, 1926.

Statistics Compiled from 1926 Questionnaire Covering the Second Quarter of 1926[1]

	Long Tons			
RECLAIMED RUBBER	Inventory at End of Quarter	Production	Shipments	Consumption
Reclaimers solely (8)	2,538	14,235	13,512	.....
Manufacturers who also reclaim (19)	6,954	24,606	8,039	16,080
Other manufacturers (68)	5,089	.....	.....	10,653
Totals	14,581	38,841	21,551	26,733

	Long Tons		
SCRAP RUBBER	Inventory at End of Quarter	Consumption in Manufacture Reclaimed	Due on Contract at End of Quarter
Reclaimers solely (8)	38,706	28,171	8,250
Manufacturers who also reclaim (18)	29,467	25,211	7,085
Other manufacturers (19)	1,741	.....	8
Totals	69,914	53,382	15,343

NUMBER OF TONS OF CRUDE RUBBER CONSUMED IN THE MANUFACTURE OF RUBBER PRODUCTS AND TOTAL SALES VALUE OF SHIPMENTS OF MANUFACTURED RUBBER PRODUCTS

PRODUCTS	Number of Tons of Crude Rubber Used	Total Sales Value of Shipments of Manufactured Rubber Products
Tires and Tire Sundries:		
Automobile and motor truck pneumatic casings	51,244	$186,342
Automobile and motor truck pneumatic tubes	12,438	33,877
Motorcycle tires (casings and tubes)	81	545
Bicycles tires (single tubes, casings and tubes)	157	525
All other pneumatic casings and tubes not elsewhere specified	.....	106
Solid tires for motor vehicles	3,381	10,083
All other solid tires	97	252
Tire sundries and repair materials	1,144	6,206
Totals	68,542	$237,936
Other Rubber Products:		
Mechanical rubber goods	3,509	$26,128
Boots and shoes	3,851	25,565
Insulated wire and insulating compounds	681	10,483
Druggists' sundries, medical and surgical rubber goods	498	3,375
Waterproof cloth, clothing and rubber sheeting	539	4,982
Hard rubber goods	270	1,830
Heels and soles	1,070	3,103
Rubber flooring	210	961
Miscellaneous, not included in any of the above items	970	5,861
Totals	11,598	$82,228
Grand totals—all products	80,140	$320,164

INVENTORY OF CRUDE RUBBER IN THE UNITED STATES AND AFLOAT FOR UNITED STATES PORTS

	Long Tons			
	Plantation	Pará	All Other	Totals
ON HAND				
Manufacturers	46,001	2,762	1,847	50,610
Importers and dealers	6,939	613	1,092	8,644
Totals on hand	52,940	3,375	2,939	59,254
AFLOAT				
Manufacturers	12,073	300	53	12,426
Importers and dealers	27,486	165	636	28,287
Totals afloat	39,559	465	689	40,713

[1] Number of rubber manufacturers that reported data was 192; crude rubber importers and dealers, 37; reclaimers (solely) 8; total daily average number of employes on basis of third week of April, 1926, was 149,885.

It is estimated that the crude rubber consumption figures are 92 per cent of the total, and the crude rubber inventory 95 per cent of the total for the entire industry.

The Market for Rubber Scrap

New York

August business in rubber scrap maintained a high level due to the heavy demand by the reclaiming industry. Collections on all grades, however, were not above fair in volume. The prices on inner tubes, air brake hose and tires, both pneumatic and solids, have advanced moderately. A decline in scrap tire prices acts to curtail the area available for collections and with the freight rate serve to limit the radius of activity of the dealers. There is no export activity in rubber scrap.

BOOTS AND SHOES. Prices are firm and steady. The only advance is in tennis shoes and soles. The consuming demand is fair.

INNER TUBES. Stocks and collections are ample. The demand for both floating and compounded grades is well maintained.

TIRES. Collections are running into ample tonnage proportioned to the demand from reclaimers. Mixed tires with beads are up $1 a ton. White auto peelings are quoted from $3 to $4 higher than last month. Mixed motor truck tires have gained slightly in value.

Quotations for Carload Lots

August 25, 1926

Boots and Shoes			
Boots and shoes, black	lb.	$0.02	@$0.02⅛
Red and white	lb.	.01	@ .01⅛
Trimmed arctics, black	lb.	.01	@ .01⅛
Untrimmed arctics	lb.	.00¾	@ .00⅞
Tennis shoes and soles	lb.	.01	@ .01¼
Hard Rubber			
No. 1 hard rubber	lb.	.13	@ .14
Battery jars, black compound	lb.	.01¾	@ .01⅞
Inner Tubes			
No. 1, floating	lb.	.09¼	@ .09½
No. 2, compounded	lb.	.07¾	@ .07½
Red	lb.	.06½	@ .06¾
Mixed tubes	lb.	.06¼	@ .06½
Mechanicals			
Mixed black scrap	lb.	.01	@ .01⅛
Heels	lb.	.00⅞	@ .01
Hose, air-brake	ton	28.00	@32.00
regular	ton	23.00	@
No. 1 red	lb.	.02¼	@ .02½
No. 2 red	lb.	.01¾	@ .02
Red packing	lb.	.01¼	@ .01⅜
White, druggists' sundries	lb.	.03½	@ .04
Mechanical	lb.	.01½	@ .01⅝
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	25.00	@26.00
Beadless	ton	33.00	@34.00
White auto tires with beads	ton	43.00	@44.00
Beadless	ton	57.00	@58.00
Mixed auto peelings	ton	38.00	@40.00
Solid—			
Mixed motor truck, clean	ton	40.00	@42.00

The following scrap rubber dealers are listed in our Buyers' Directory. For complete information see Index of Advertisers on Page 110.

Birkenstein, S., & Sons, Chicago, Illinois.
Chalfin, Joseph, & Co., Inc., New York, N. Y.
Cummings, Wm. H., & Sons, New York, N. Y.
Muehlstein, H., & Co., Inc., New York, N. Y.
Norton, M., & Co., Medford, Massachusetts.
Schnurmann, J., London, England.
Weber, Hermann, Hoboken, New Jersey.

Reclaimed Rubber

The August consumption of reclaimed rubber increased over that for July and is estimated at 11,000 tons. This was due to the heavy output of tires and mechanical rubber goods, including floor tiling.

Reclaimers are operating their plants at a high rate of production. The demand is largely for high tensile reclaims, inner tube stocks, standard tires and white reclaims. A heavy volume of business seems assured for the remainder of the year which will engage the increased capacity of many of the reclaiming companies.

The decline of crude rubber to the 40 cent level for the past two months, and the prevailing dullness of that market have reacted upon the price of reclaims and stimulated closer competition. The effect is seen in the current quotations which are distinctly lower than a month ago. The grade of reclaim known as Uncured Friction has become obsolete and has been dropped from the list.

New York Quotations

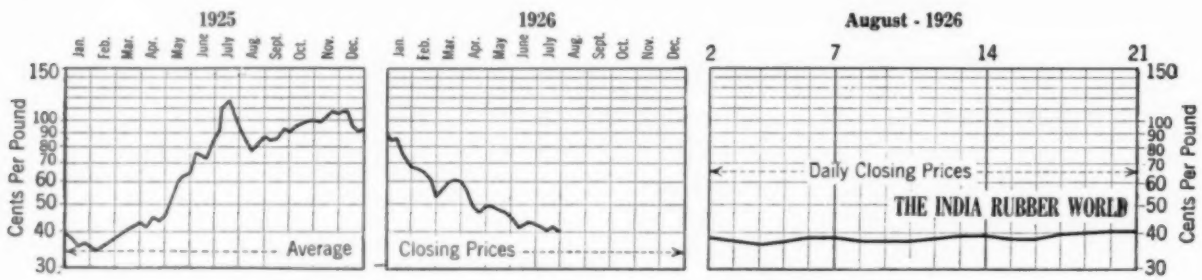
August 25, 1926

Auto Tire	Specific Gravity	Price Per Pound
Black	1.21	$0.09¼ @ $0.10
Black, washed	1.18	.11 @ .11¼
Black selected tires	1.20	.10¾ @ .11
Dark gray	1.35	.12 @ .14
Light gray	1.38	.15 @ .16
White	1.40	.17½ @ .18½
High Tensile Black		
Super-reclaim, No. 1	1.20	.20 @ .22
No. 2	1.20	.17 @ .18
Shoe		
Unwashed	1.60	.08¾ @ .09
Washed	1.50	.11¾ @ .12¼
Tube		
No. 1	1.00	.19 @ .21
No. 2	1.18	.16 @ .17
Miscellaneous		
High grade, red	1.35	.17½ @ .18¼
Truck tire, heavy gravity	1.55	.05 @ .05½
Truck tire, light gravity	1.40	.09¾ @ .10¼
Mechanical blends	1.60	.08 @ .09

DURING THE FIRST HALF OF THE PRESENT YEAR THE UNITED Kingdom has exported 400,547 automobile casings, value £1,264,088, as compared with 424,653 casings, value £1,049,445, the total for the corresponding six months of 1925. The leading markets for these goods were Australia, British India, British Malaya, Irish Free State, New England, British South Africa, Argentina, Brazil, and Spain.

The following reclaimed rubber dealers are listed in our Buyers' Directory. For complete information see Index of Advertisers on Page 110.

Appleton Rubber Co., Franklin, Massachusetts.
Bloomingdale Rubber Co., New York, N. Y.
Clapp, E. H., Rubber Co., Boston, Massachusetts.
Defiance Rubber Co., Defiance, Ohio.
Manhattan Rubber Manufacturing Co., Passaic, New Jersey.
Nearpara Rubber Co., Trenton, New Jersey.
New Jersey Rubber Co., Lambertville, New Jersey.
Pequanoc Rubber Co., Butler, New Jersey.
Philadelphia Rubber Works, Philadelphia, Pennsylvania.
Rubber Regenerating Co., Naugatuck, Connecticut.
Somerset Rubber Reclaiming Works, New Brunswick, New Jersey.
U. S. Rubber Reclaiming Co., Inc., New York, N. Y.
Vulcan Recovery Co., Trenton, New Jersey.
Xylos Rubber Co., Akron, Ohio.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York Open Market

THE August rubber market was dull and lacked factory buying interest. There was a weak and sagging tendency during the first half month but later the market became firm at about 40 cents for ribbed smoked sheets which seems to coincide with the general view of rubber manufacturers as fair for both sides of the market.

During the week ended August 7 trading was very quiet with but little buying and only in small volume. A fair quantity of business was reported from the far eastern markets on the part of the large consumers. On August 5 the market turned upward with shorts covering. The announcement next day by the Colonial Office that 21*d* would be retained as the determining point in the decision of restriction for the quarter beginning November 1 had the effect of stiffening prices and the week closed with prices firm.

While market was dull for the week ended August 14, prices turned firmer due to the strength shown by the foreign markets. There was little inquiry on the part of consumers. They were not inclined to follow the market and withdrew toward the close of the week.

The week ended August 21 brought out some buying on the part of the small and medium size tire factories. Their interest was chiefly in August and September and gradually firmed spot ribs close to 40 cents. There was no factory interest in January-March positions which remained quite inactive. Moderate sized rubber companies are paying no premiums on forward rubber but figure it safer to buy at ¼ to ½ cent under current spot quotations and hold the rubber for October-December consumption. Dealers willing to make such concessions find ready buyers today, while the large concerns are interested at 40 cents for September-October. During the entire month the premium for first latex spot did not exceed ½-cent over ribbed smoked sheets.

The market of August 23 to 26 was uniformly quiet, prices were barely steady, and spot ribs closed daily at 40 cents nominal.

Parás rose in sympathy with plantations and balata remained quiet with but little inquiry.

Importations of all grades* in July were 37,087 tons, compared with 33,918 tons one year ago. Plantation arrivals for July were 35,537 tons, compared with 32,147 tons one year ago. Total importations of plantation rubber for seven months ended July 31, 1926, were 230,514 tons compared with 201,546 tons for the corresponding period of 1925. Total importations of all grades of rubber for the seven months ended July 31, 1926 were 245,724 tons compared with 215,705 tons for the corresponding period of 1925. Arrivals August 1 to 24 were 16,739 tons.

Arrivals for the full month of August are estimated at 32,000 tons compared with 37,087 tons for July.

Rubber afloat to the United States, representing 97 per cent of such importations is reported as follows by the Rubber Division of the Bureau of Foreign and Domestic Commerce:

RUBBER AFLOAT TO THE UNITED STATES

(Figures in long tons)

Week Ended	British Malaya	Ceylon	Dutch East Indies	London	Total
August 14	5,058	842	1,575	490	7,965
August 21	4,635	483	1,063	397	6,578

Gross exports of crude rubber from Malaya in July totaled 28,824 long tons, and gross imports into Malaya, including wet rubber, 15,280 long tons. Ceylon exports during June totaled 3,906 long tons. Dealers' stocks in Singapore July 31 amounted to 15,732 long tons and in Penang to 3,684 long tons.

New York Quotations

Following are the New York spot and future rubber quotations for one year ago, one month ago, and August 25, the current date:

Plantation Hevea	August 25, 1925		July 26, 1926		August 25, 1926	
Rubber latex (Hevea)....*gal.*	$2.75	@	$1.80	@	$1.80	@
CREPE						
First latex, spot.....	.83	@.85	.41	@.41½	.40½	@.41¼
Aug.-Sept.	.80	@.82	.41¼	@.41¾	.40½	@.40½
Oct.-Dec.	.67	@.68	.42½	@.43	.40¾	@.41½
Jan.-Mar.	.61	@.62	.43	@.43½	.41¼	@.42½
Jan.-June	.60	@.60½		@	.43	@.43½
Off latex, spot.....	.82	@	.40½	@.41	.40	@.40¼
Amber No. 2, spot.....	.74	@	.39	@.40	.39	@.39½
Aug.-Sept.	.70	@	.39	@.40	.37½	@.38½
Oct.-Dec.	.64	@	.39	@.40	.38	@.38¾
Jan.-Mar.	.52	@		@	.40½	@.40¾
Jan.-June	.50	@		@		@
Amber No. 3, spot.....	.73	@	.38	@.39	.38½	@.39
Brown, thin, clean.....	.72	@	.38	@.39	.37½	@.38½
Brown, smoky	.70	@	.37½	@	.37	@.37½
Brown, roll	.58	@	.35½	@.36	.35	@.35½
Sole crêpe	.86	@	.65	@	.60	@
SHEET						
Ribbed, smoked spot.	.82	@.83½	.40½	@.41	.40	@.40¼
Aug.-Sept.	.79	@.80	.41	@.41½	.40	@.40¼
Oct.-Dec.	.67	@.68	.42	@.42½	.40½	@.40¾
Jan.-Mar.	.61	@.63	.42½	@.43	.41½	@.42
Jan.-June	.60	@.60½		@	.42¼	@.43½
East Indian						
PONTIANAK						
Banjermassin	.19¾	@	.16	@	.16¼	@
Pressed block		@	.25	@	.27½	@.28¼
Sarawak	.08	@.09	.16½	@	.16¼	@
South American						
PARAS						
Upriver, fine	.72	@	.41	@	.40	@
Upriver, fine	*.95	@	*.54	@	*.54	@
Upriver, medium	.65	@		@		@
Upriver, coarse	.51	@	.23½	@	.25½	@
Upriver, coarse	*.80	@	*.40	@	*.39	@
Islands, fine	.61	@	.39	@	.36	@
Islands, fine		@	*.41	@	*.50	@
Cameta	.35	@	†.25	@	†.25	@
Acre, Bolivian, fine.....	.72	@	.41½	@	.41	@
Acre, Bolivian, fine.....	*.95	@	*.55	@	*.54	@
Beni Bolivian	.72½	@	.41¼	@	.41	@
Madeira	.73	@	.41½	@	.41	@
Peruvian, fine	.67	@	.36	@	.39	@
Tapajos, fine	.65½	@	.37½	@	.38	@

* Washed and dried crêpe. Shipment from Brazil.
† Nominal. ‡ Duty paid.

New York Spot Closing Rubber Prices—Cents Per Pound

	July, 1926												August, 1926											
	19	20	21	22	23	24	26	27	28	29	30	31	2	3	4	5	6	7	9	10	11	12	13	14
PLANTATIONS																								
Sheet																								
Ribbed smoked	41½	41	41	40¾	40¾	40¾	40¾	40½	40¾	40¾	39½	39	38¾	37¾	36¾	37½	38½	38½	37½	37½	37½	38¼	39	39
Crêpe																								
First latex	41¾	41¼	41½	41	41	41¼	41	40¾	41	41	39¾	39½	39½	38¾	37¾	37¾	38¾	39	37¾	37¾	37¾	38½	39	39¼
No. 2 blanket	39¼	39¾	39¾	38¾	38¾	39	38¾	39	39	39	37¾	37¼	36¾	36	35¼	36½	37	36¾	36½	36½	36½	36¾	37	37½
No. 3 blanket	38¾	38¾	38¾	38½	38½	38½	38¼	38½	38½	38½	37½	37	36¼	35¾	34¾	35¾	36½	36¼	35¾	35¾	35¾	36¼	36¾	37
No. 4 blanket	37¾	37½	37¾	37½	37¾	37½	37½	38	37¾	37¾	36¾	36¼	35½	34¾	34¼	35	35¾	35½	35¼	35¼	34¾	35½	35¾	36¼
Thin clean brown	39	38½	39	38¾	38½	38¼	38	38½	38½	38½	37¼	36¾	36½	35¾	34¾	35¾	36½	36¼	35¾	35½	35½	36	36½	37
Rolled brown	35¾	36¼	36¼	36	35¾	35¾	36	35¾	35½	35½	34¾	34¾	33¾	33½	32¾	33½	34	33¾	33½	33	33	33½	34½	34½
Off latex	41¼	40¼	40¼	40½	40¼	40¾	40¼	40	40¼	40¼	39	38¾	38¼	37½	36½	37¼	38¼	38¼	37¼	37¼	37	38	38¼	38¾

South American

CAUCHO	August 25, 1925		July 26, 1926		August 25, 1926	
Upper Caucho ball	.52	@	.23½	@	.26	@
Upper Caucho ball	*.80	@	*.41	@	*.39	@
Lower Caucho ball	.49	@	.23	@	.25	@
Maniçobas						
Ceará negro heads	.50	@	†.35	@	†.35	@
Ceará scrap	.40	@	†.18	@	†.18	@
Maniçoba 30% guar	.45	@	†.34	@	†.34	@
Mangabeira, thin sheet	.45	@	†.38	@	†.38	@
Centrals						
Central scrap		@	.22	@.23	.25	@
Central wet sheet	.44	@	.15	@.16	.20	@
Corinto scrap	.49	@.50	.22	@.23	.25	@
Esmeralda sausage		@		@	.25	@
Guayule						
Dura, washed and dried	.50	@	.33	@	.32	@
Leon, washed and dried		@	.31	@	.30	@
Gutta Percha						
Gutta Siak	.22	@	.29	@.30	.32¼	@
Gutta Soh	.30	@	.26	@	.30	@
Red Macassar	3.50	@	3.00	@	3.00	@
Balata						
Block, Ciudad Bolivar	.63	@.64	.60	@	.55	@
Colombia	.54	@	.45	@	.50	@
Panama	.54	@	.45	@	.50	@
Surinam sheet	.77	@	.82	@	.75	@
amber	.82	@	.85	@	.80	@
Chicle						
Honduras	.58	@.68	‡.64	@	‡.65	@
Yucatan, fine	.58	@.68	‡.65	@	‡.65	@

*Washed and dried crêpe. Shipment from Brazil.
†Nominal. ‡Duty paid.

New York Spot Closing Rubber Prices—Cents, Per Pound

	August 1926					
PLANTATIONS	16	17	18	19	20	21
Sheet						
Ribbed Smoked	38½	38½	39½	40	40¼	40¼
Crêpe						
First latex	38¾	38¾	39¾	40¼	40½	40½
No. 2 blanket	36¾	36¾	37¾	38½	38¼	38¼
No. 3 blanket	36½	36½	37¼	38	38	38
No. 4 blanket	35½	35½	36½	37	36¾	36¾
Thin clean brown	36½	36¾	37½	38¼	38¼	38
Rolled brown	34½	34½	35	35½	35½	35¼
Off latex	38	38	39	39½	39¾	39¾

Comparative Low and High New York Spot Rubber Prices

	August							
	1926*		1925		1924	
PLANTATIONS						
First latex crêpe	$0.37	@$0.41	$0.71	@$0.99	$0.25¼	@$0.28¼
Smoked sheet, ribbed	.36¾	@ .41	.64	@ .99	.24⅛	@ .27⅜
PARAS						
Upriver, fine	.37	@ .39½	.69	@ .93	.23¼	@ .28½
Upriver, coarse	.21	@ .24½	.47	@ .63	.15	@ .17½
Islands, fine	.33½	@ .37	.59	@ .80	.21½	@ .25
Cametá	.21	@ .21½	.37	@ .46	.13¾	@ .16

* Figured to August 24, 1926.

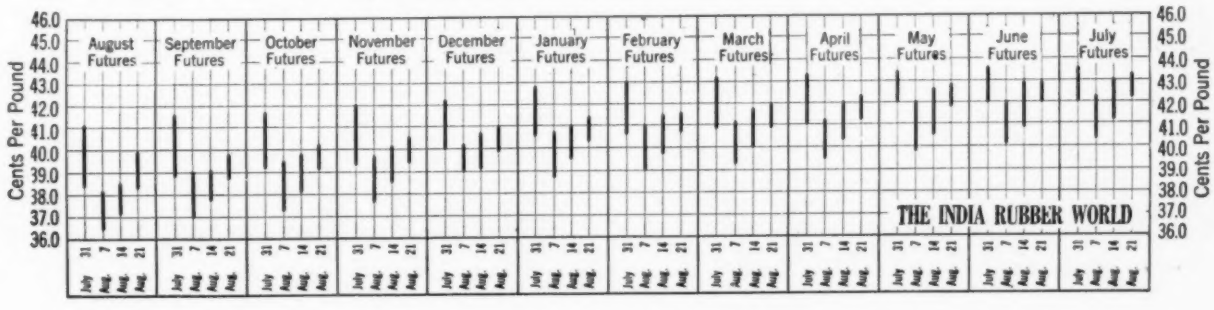
DURING MAY, 1924, THE UNITED STATES IMPORTED 62,167,356 pounds of crude rubber, value $14,304,259; in May, 1925, the figures had risen to 82,727,453 pounds, value $30,311,754; while the totals for May, 1926, are 66,654,899 pounds, value $36,896,080.

The Rubber Exchange of New York, Inc.

Daily Market Futures—Ribbed Smoked Sheets—Closing Prices—Cents Per Pound

	July						August																	
1926	26	27	28	29	30	31	2	3	4	5	6	7	9	10	11	12	13	14	16	17	18	19	20	21
July	41.2	41.2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
August	41.1	40.6	40.4	40.3	38.8	38.4	38.2	37.5	36.5	37.0	38.1	37.9	37.3	37.9	37.2	38.0	38.4	38.5	38.3	38.3	39.0	39.7	39.9	39.9
September	41.5	41.6	41.1	41.3	39.5	38.8	38.0	37.9	37.0	37.8	38.7	38.7	37.8	37.9	37.7	38.5	38.6	39.1	38.8	38.7	39.4	39.5	39.8	39.8
October	41.8	41.7	41.5	41.7	39.8	39.2	39.5	38.0	37.3	38.3	39.4	39.0	38.1	38.2	38.1	39.0	39.2	39.8	39.3	39.1	39.8	40.0	40.2	40.2
November	42.1	42.0	41.7	41.8	40.4	39.3	39.7	38.7	37.7	38.5	39.5	39.7	38.5	38.7	38.5	39.3	39.5	40.1	39.6	39.4	40.4	40.5	40.5	40.6
December	42.3	42.2	42.0	42.2	40.7	40.0	40.0	39.0	38.2	38.7	40.2	40.1	39.1	39.2	39.1	39.6	39.9	40.7	40.0	39.9	40.7	40.9	40.9	41.0
1927																								
January	42.7	42.8	42.7	42.9	41.1	40.5	40.7	39.6	38.7	39.4	40.6	40.5	39.7	39.6	39.5	40.2	40.5	41.0	40.3	40.5	41.3	41.4	41.1	41.3
February	42.8	43.0	42.8	43.0	41.2	40.6	40.8	39.9	39.0	39.7	40.9	40.6	39.8	39.7	39.7	40.5	40.8	41.4	40.7	40.7	41.5	41.6	41.5	41.6
March	43.0	43.2	43.0	43.1	41.3	40.8	41.1	40.1	39.3	40.0	41.0	40.7	40.1	40.2	40.0	40.7	40.9	41.7	40.9	41.0	41.7	41.8	41.9	41.9
April	43.1	43.3	43.1	43.2	41.4	41.0	41.2	40.2	39.5	40.2	41.3	40.9	40.4	40.3	40.3	40.9	41.4	42.0	41.2	41.3	42.1	42.1	42.2	42.3
May	43.2	43.4	43.2	43.3	42.0	42.0	42.0	40.8	39.8	40.5	41.5	41.1	40.7	40.5	40.6	41.1	41.9	42.6	41.8	41.9	42.8	42.8	42.5	42.6
June	43.3	43.5	43.3	43.4	42.1	42.2	42.0	41.2	40.1	40.8	41.8	41.3	41.0	40.9	40.8	41.3	42.2	42.9	42.0	42.1	43.1	43.0	42.9	43.0
July	...	...	...	...	...	...	42.2	41.2	40.3	41.5	42.0	41.5	41.2	41.1	41.1	41.6	42.4	43.0	42.2	42.3	43.3	43.2	43.1	43.2

New York Rubber Exchange—High and Low Monthly Futures—Cents Per Pound—July 31 to August 21, 1926



Rubber Exchange of New York, Inc.

Trading on the Rubber Exchange from July 26 to August 24 resulted in the sale of 4,443 contracts equivalent to 11,107.5 long tons, as compared with 2,800 contracts and 7,000 tons the previous month.

Operations increased in volume following the announcement by the Colonial Office that the exportable allowance for August, September and October would remain at 100 per cent of standard. An official statement was made August 7 that the rubber restrictional pivotal price for the current quarter will continue at 21*d*, and that if this average is not maintained the exportable allowance for the next quarter will be reduced to 80 per cent of standard production. This is undubitable proof that stabilization at not less than 21*d* will become standard and that future suitable quarterly adjustments of exportable allowance will be made to that end. The circumstances may call for revision downward of the standard production to coincide with actual output possibilities.

The export permits issued last quarter but not used represent 28,000 tons for both British Malaya and Ceylon. The eastern governments are investigating the true position of this "carry over" and may recommend to the British Colonial office the revision of the standard production of those estates whose rating of output has proved to be in excess of their producing capacity.

Cancelation of these left over coupons does not mean withholding rubber since the rubber called for was not produced. Unless higher prices prevail 20 per cent restriction is liable to be applied after November 1. In this connection it should be noted that London stocks alone, if maintained at or above the present level of 30,000 tons, will practically offset such reduction by a liberal margin.

The market for the week July 26-31 continued dull, although American orders were placed in London each day in the effort to hold the quarter's average price up to 21*d*. The increase in activity was due chiefly to buyers' confidence on the side of no restriction. Sellers' opinion was confident of lower prices because of the large visible supplies and reports of stocks being reserved in the Far East awaiting restriction decision in London.

During the week August 2-7 dealings became active after receipt of cables that the exportable allowance for the present quarter would remain at 100 per cent. All positions declined gradually but toward the end of the week recovered slightly. London and Singapore followed the New York decline, with no indications of selling pressure. Manufacturers did not buy on the decline and were interested only in spot and nearby deliveries for current needs. January-March position was practically without interest.

The week August 9-14 continued quiet, and trading was featureless, although a fair tonnage was dealt in. Manufacturers were interested only in spot and August rubber. In anticipation of the July report by the Rubber Association of arrivals and consumption of stocks the market was unsettled and importers, dealers and brokers looked for an upward trend in prices with a slight temporary reaction.

The market of August 16-21 opened quietly with prices unchanged. On Wednesday manufacturers' buying in New York, London and Singapore started an upward movement and lent activity to business. The upward trend has attracted outside interest and increased daily sales notably as shown by the increased operations of traders, dealers and manufacturers.

London

The market for the month was mostly dull and quiet. The buying interest was chiefly speculative. The price of spot fluctuated between 19 and 20*d*. Sales for the first two weeks of the month averaged 19.198*d*.

The week ended August 7 the market opened with declining prices due to selling on restriction defeat. Prices were still further depressed by speculative liquidation. Toward the close of the week prices stiffened on official confirmation of the pivotal price of 21*d* for restriction.

The week ended August 14 was marked by fluctuations between 19¼ and 20*d*. There was a little speculative buying early in the week which widened steadily, the week closing with a strong speculative buying interest and the price firm at 20*d*.

The week of August 21 brought better conditions. The lowest spot price was 19⅝*d* advancing to 20¼*d* under good buying interest and the influence of the advance of the New York price. Fair buying was done by the English and Continental manufacturers. The first half of the following week ended August 28, was dull and featureless, the price declining from 20*d* to 19¾*d* on the 25th.

London stocks on August 23 were 2,012 tons more than on August 2, an average gain of 670 tons weekly. The weekly record was as follows: July 31, 27,857 tons; August 7, 27,972 tons; August 14, 29,313 tons; August 21, 29,678 tons.

Singapore

As usual the Singapore market kept pace with the London and New York conditions. Early in the month prices were weak on the failure of restriction but later reacted steadily upward. The weekly closing records were as follows: August 7, the market closed quiet and steady at 18⅝*d*; August 14, there was good buying interest, closing price 18¾*d*; August 21, the market closed at 19*d*, dull and with strong downward tendency which was effective in dropping the price to 18⅞*d* on August 23, when the market opened quiet.

The stocks at Singapore and Penang on August 1 were 23,000 tons compared with 19,400 tons on July 1.

PNEUMATIC CASINGS FOR AUTOMOBILES EXPORTED BY AMERICAN manufacturers totaled for the eleven months ended May, 1925, 1,317,715, value $15,602,642. The number rose during the corresponding period ended May, 1926, to 1,457,408, with value $22,834,771.

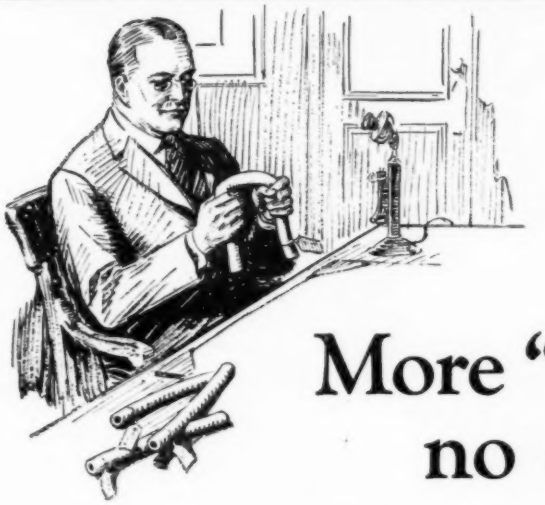
AMERICAN EXPORTS OF RUBBER THREAD HAVE RISEN FROM A TOTAL for the eleven months ended May, 1925, of 1,234,461 pounds, value $1,439,624, to the figure for the corresponding eleven months ended May, 1926, of 1,627,943 pounds, value $2,105,351.

The following crude rubber importers, dealers, and brokers are listed in our Buyers' Directory. For complete information see Index of Advertisers on Page 110.

Araujo, J. G. & Co., Manaos, Brazil.
Astlett, H. A., & Co., New York, N. Y.
Baird Rubber & Trading Co., New York, N. Y.
Buckleton & Co., Ltd., Liverpool, England.
Chalfin, Joseph, & Co., Inc., New York, N. Y.
Chipman, R. L., New York, N. Y.
Dunbar, F. W., & Co., Inc., New York, N. Y.
Dunbar, J. Frank, Co., Inc., New York, N. Y.
Hankin, George, & Co., London, England.
Hardy, R. S., Co., New York, N. Y.
Henderson Brothers & Co., Inc., New York, N. Y.
Hentz, H. & Co., New York, N. Y.
Hirsch, Adolph, & Co., New York, N. Y.
Jacoby, Ernest, Boston, Massachusetts.
Muehlstein, H. & Co., New York, N. Y.
Wilson, Charles T., Co., Inc., New York, N. Y.

VULCANEX

The Accelerator for all Low and Medium Grade Goods



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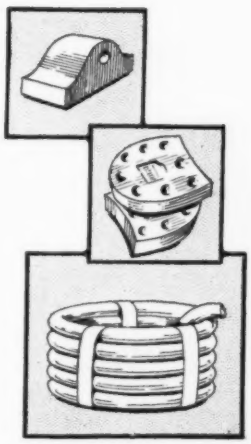
We would like to show you how the use of Vulcanex will improve the quality of your products. An inquiry entails no obligation. Dictate a note NOW!



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Dyestuffs Department, Sales Division,
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The Market for Chemicals and Compounding Ingredients

New York

THE resumption of capacity output in the tire and mechanical goods and other important divisions of the rubber industry has stimulated the demand for the standard compounding materials, all of which are moving freely. In some instances contract deliveries have been advanced to meet manufacturers' requirements. Prices in general are firm and unchanged except for a small advance in litharge due to a corresponding advance in pig lead the last of July.

ACCELERATORS. The practical necessity for accelerators in rubber goods manufacturing has resulted in the introduction recently of several new materials for hastening vulcanization and improving tensile properties. "Captax" and certain furfural derivatives are the latest additions to the accelerator list. In every instance confusion in selection by the compounder is eliminated by publication of test data and suggestions from the manufacturers' chemical staff.

ANTI-OXIDANTS. Anti-oxidants are proving as opportune for the rubber manufacturer as organic accelerators have previously. They are limited in the market so far to two, both of which are highly esteemed and indispensable.

BENZOL. This solvent shows much market activity. Production is practically all absorbed by contracts. The price is steady.

CARBON BLACK. During the month this material has been in excellent demand stimulated by the increased activity of the tire manufacturers. Prices are firm and unchanged. It is thought unlikely that there will be further interference this year in the production of black in the Monroe, Louisiana, field where 75 per cent of the carbon black is produced.

CLAY. Rubber compounding clays of the various qualities are all very active and moving in heavy tonnage. They serve as recognized reinforcing agents for goods subject to severe wear in service, as well as cheap fillers, and are offered in a range of qualities to meet both wear and cost.

LITHARGE. Movement has been steady and routine with some improvement. Early in the month there was an advance of ¼-cent a pound on the commercial grade due to the rise in pig lead.

LITHOPONE. During most of the past month spot demand was light. The volume of trade was greater to date than one year ago.

MINERAL RUBBER. This material ranks as the most important softener for rubber compounding. The tonnage consumed has increased rapidly in the past year and is now estimated at about 40,000 tons per year, most of which is utilized by the rubber industry.

SOLVENT NAPHTHA. The demand is never failing; prices are unchanged and stocks sold ahead.

ZINC OXIDES. During the past month the rubber industry has largely increased its purchases. Leaded grades are moving in larger volume and lead-free grades are very active. Prices are steady and unchanged.

New York Quotations

August 25, 1926

Accelerators, Inorganic

Lead, carbonate	lb.	$0.10½	@
Lead, red	lb.	.11½	@
sublimed blue	lb.	.10	@
sublimed white	lb.	.10	@
Lime, R. M. hydrated	ton	15.00	@
Litharge	lb.	.11½	@
Magnesia calcined, light, (bbls.)	lb.	.20	@
calcined, md. light (bbls.)	lb.	.07	@
calcined, extra light (bbls.)	lb.	.40	@
calcined, heavy (bbls.)	lb.	.05	@
magnesium, carb., light (bags)	lb.	.06½	@ .07
Orange mineral A.A.A	lb.	.14¼	@
Rubber lead No. 4	lb		@

Accelerators, Organic

A1	lb.	.25	@ .30
A 5-10	lb.	.32	@ .36
A-7	lb.	.65	@ .85
A 10	lb.	.48	@ .60
A-11	lb.	.70	@ .90
A-19	lb.	.70	@ .90
A-40	lb.	.65	@ .85
Z-88	lb.	.75	@ 1.00
Aldehyde ammonia	lb.	.82	@ .85
Aniline (drums)	lb.	.16½	@ .17
B. B	lb.	1.05	@ 1.07
Captax	lb.	1.20	@ 1.50
D. P. G. salt	lb.	.76	@
Di-ortho-tolylguanidine	lb.	1.08	@
Diphenyl guanidine	lb.	.88	@
Ethylidine aniline	lb.	.65	@
Excellerex	lb.	.35	@ .40
Formaldehyde aniline	lb.	.42	@
Furac 1, 2 and 3	lb.	2.50	@
Grasselerator 102	lb.	.80	@ .85
552	lb.	4.80	@ 5.00
808	lb.	1.25	@ 1.50
Heptene	lb.	.55	@
Hexamethylene tetramine	lb.	.80	@ .85
Hydrofuramide	lb.	.25	@
Methylene aniline	lb.		@
Methylene dianiline	lb.	.38	@
Monex	lb.	3.25	@
No. 999 lead oleate	lb.	.16	@ .17
R. & H. 50 (100 lb. drums)		.60	@ .65
Super-sulphur, No. 1	lb.	.50	@
No. 2	lb.	.18	@ .25
Tensilac No. 39	lb.	.70	@
No. 41	lb.	.65	@
Thiocarbanilid	lb.	.22	@ .28½
Trimene	lb.	.75	@
base	lb.	1.20	@
Triphenylguanidine	lb.	.69	@ .73
Tuads	lb.	3.25	@
Vulcone	lb.	.74	@
Zimate	lb	4.00	@

Acids

Acetic 28% (bbls.)	100 lb.	$3.50	@
glacial (carboys)	100 lb.	12.21	@
Oleic	lb.	.09¾	@ .10
Stearic	lb.	.13	@ .13½
Sulphuric, 66° (carboys)	100 lb.	1.60	@

Alkalies

Caustic soda	lb.	.03	@
Sulphite soda	100 lbs.	3.50	@

Anti-Oxidants

Age-Rite	lb.	.85	@ .90
Antox	lb.	.88	@
V. G. B	lb.	.66	@ .70

Colors

BLACK

Bone	lb.	.05½	@ .11
Carbon (see Compound. Ing.)			
A. & W. nonfli No. 1	lb.	.40	@
No. 2	lb.	.25	@
Drop	lb.	.07	@ .15
Lampblack	lb.	.10	@ .40

BLUE

A. & W. blue	lb.	1.25	@ 5.00
Du Pont, N	100 lbs.	1.35	@
Marine, A. C	100 lbs.	1.30	@
Prussian	lb.	.34	@ .35
Ultramarine	lb.	.09	@ .35

BROWN

Sienna, Italian	lb.	.05½	@ .06½
Umber, Turkey	lb.	.05½	@ .06½

GREEN

A. & W. green	lb.	1.25	@ 3.00
Chrome, light	lb.	.37	@
medium	lb.	.33	@
dark	lb.	.35	@
Du Pont, G. L	100 lbs.	.30	@
Y. L.	100 lbs.	.75	@
Oxide of chromium	lb.	.38	@

ORANGE

Du Pont R. O	100 lbs.	1.30	@
R. X.	100 lbs.	1.30	@
Y. O.	100 lbs.	1.60	@
Y. X.	100 lbs.	1.15	@

RED

A. & W. red	lb.	.75	@ 3.50
purple	lb.	2.00	@ 4.00
Antimony, golden, No. 1	lb.	.18	@
No. 2	lb.	.20	@
golden 15/17%	lb.	.20	@

Colors—*(Continued)*

RED—*(Continued)*

Antimony, crimson, F	lb.	$0.27	@
crimson, R.M.P. No. 3	lb.	.50	@
7-A	lb	.35	@
Z-2	lb	.18	@
Sulphuret vermillion	lb.	.37½	@ .45
Du Pont R. I	100 lbs.	2.00	@
R. S.	100 lbs.	1.45	@
Brilliant A. C	100 lbs.	1.20	@
Iron Oxides			
bright red pure domestic	lb.	.12	@
bright red pure English	lb.	.14	@ .16
bright red reduced English	lb.	.10	@ .12
bright red reduced domestic	lb.	.10	@
Indian (maroon), red pure domestic	lb.	.11	@
Indian (maroon), red pure English	lb.	.11	@ .13
Indian (maroon), red reduced English	lb.	.08	@ .10½
Indian (maroon), red reduced domestic	lb.	.08	@
Oximony	lb.	.13¼	@
Spanish red oxide	lb.	.04	@
Venetian reds	lb.	.02¼	@ .06
Vermilion, English quicksilver	lb.	1.59	@ 1.64

WHITE

Albalith	lb.		@
Lithopone	lb.	.05½	@ .06¼
Azolith	lb.	.05⅝	@ .06⅛
Grasselli	lb.	.05⅝	@ .06⅛
Sterling	lb.	.05⅛	@ .06⅛
Zinc Oxide			
AAA (lead free)	lb.	.07½	@ .07¾
Azo (factory):			
ZZZ (lead free)	lb.	.07¼	@ .07¾
ZZ (5% leaded)	lb.	.06¾	@ .07¼
Z (8% leaded)	lb	.07⅛	@ .07⅜
French Process			
Green seal	lb.	.11¼	@ .11⅜
Red seal	lb.	.10¼	@ .10⅜
White seal	lb.	.12¾	@
Horse Head Brands			
Selected	lb.		@
Special	lb.		@
XX red	lb.		@

Colors—(Continued)

WHITE—Continued

Leaded Brands			
Lehigh	lb.	$0.07⅛ @	$0.07¾
Standard	lb.	.06⅞ @	.07⅛
Sterling	lb.	.07⅛ @	.07⅝
Superior	lb.	.07⅛ @	.07⅝
Palmerton Process			
Kadox, black	lb.	@	
blue	lb.	@	
red	lb.	@	

YELLOW

A. & W. yellow	lb.	2.00 @	4.00
Arsenic	lb.	.46 @	.48
Chrome	lb.	.17½ @	.18½
Du Pont N.	100 lbs.	4.00 @	
Grasselli cadmium	lb.	1.50 @	
Ochre, domestic	lb.	.01½ @	.02½
imported	lb.	.03 @	.03¾
Oxide, pure	lb.	.08½ @	.09
Zinc, imp.	lb.	.24 @	

Compounding Ingredients

Aluminum flake (sacks c.l.)	ton	21.85 @	
(sacks l.c.l.)	ton	24.50 @	
Filler	ton	@	
Silicate	ton	25.00 @	26.00
Ammonia carbonate	lb.	.12 @	.13
Asbestine	ton	13.50 @	14.50
Barium, carbonate	ton	50.00 @	
dust	lb.	.05 @	.06
Barytes, imported	ton	30.00 @	
water ground and floated	ton	23.00 @	25.00
Basofor	lb.	.04½ @	
Blanc fixe, dry	lb.	.04½ @	.04½
pulp	ton	60.00 @	
Carbon Black			
Aerfloted arrow	lb.	.08 @	.12
Compressed	lb.	.08½ @	.12½
Uncompressed	lb.	.08 @	.12
Micronex	lb.	.09 @	.13
Carrara filler	lb.	.01½ @	
Catalpo (facty.)	lb.	.02 @	
Chalk	lb.	.02½ @	.05½
Clay, blue ribbon (c. l. fcty.)	ton	14.00 @	
Blue Ridge, dark	ton	9.00 @	
light	ton	12.00 @	
China	lb.	.01½ @	
Dixie	ton	20.00 @	
Langford	ton	12.00 @	
Perfection	ton	14.00 @	
Mineral Flour (Florida)	ton	20.00 @	23.00
Para	ton	12.00 @	15.00
Suprex	ton	13.00 @	26.00
Tuscan	ton	10.00 @	
White floss	ton	17.00 @	
Cotton flock, black	lb.	.11½ @	.12½
light-colored	lb.	.12 @	.14
white	lb.	.14 @	.26
Cotton linters clean mill run	lb.	@	
Fossil flour	lb.	.02¼ @	
Glue, high grade	lb.	.16 @	.23
medium	lb.	.18 @	.24
low grade	lb.	.15 @	.17
Infusorial earth	lb.	.02¼ @	
Mica, amber (fact'y)	lb.	.05 @	
Diamond	lb.	.05 @	.06
Pumice stone, powd.	lb.	.02½ @	.04

New York Quotations

August 25, 1926

Compounding Ingredients—(Continued)

Rotten stone (bbls.)	lb.	$0.02½ @	$0.10
Slate flour (fact'y c. l.)	ton	@	
Soap bark, cut	lb.	.09½ @	.10
Soapstone	ton	15.00 @	22.00
Sodium bicarb.	100 lbs.	2.15 @	
Starch, pcwd. corn			
Buffalo (bbls.)	100 lbs.	3.69 @	3.79
Buffalo (bags)	100 lbs.	3.42 @	3.52
Talc, domestic	ton	25.00 @	
French	ton	18.00 @	45.00
Terra blanche	ton	27.00 @	30.00
Thermatomic carbon	lb.	.05 @	
Whiting:			
Commercial	100 lbs.	.85 @	1.00
English, cliffstone	100 lbs.	1.50 @	
Quaker	ton	13.00 @	
Sussex	ton	8.00 @	
Westminster Brand	100 lbs.	@	
Witco (c.l.) (fact'y)	ton	12.00 @	
Whiting, imp. chalk	100 lbs.	.90 @	1.00
Paris White, Eng. Cliffstone,	100 lbs.	1.50 @	2.00
Wood flour	ton	@	
Pulp, XXX (fact'y)	ton	35.00 @	
X (fact'y)	ton	25.00 @	

Mineral Rubber

Genasco (facty.)	ton	50.00 @	52.00
Gilsonite (fact'y)	ton	37.14 @	39.65
Granulated M. R.	ton	33.00 @	38.00
Hydrocarbon, hard	ton	29.00 @	35.00
Hydrocarbon, soft	ton	29.00 @	35.00
Ohmlac Kapak, M-R	ton	80.00 @	90.00
K-4	ton	175.00 @	
320/340 m. p. hydrocarbon	ton	47.00 @	52.00
300/310 m. p. hydrocarbon	ton	42.00 @	47.00
Paradura (fact'y)	ton	70.00 @	72.50
Pioneer, M. R., solid (fac.)	ton	42.00 @	44.00
M. R. granulated	ton	52.00 @	54.00
Robertson, M. R. solid (facty.)	ton	35.00 @	75.00
M. R. gran. (facty.)	ton	42.00 @	80.00

Oils (Softeners)

Castor, No. 1, U. S. P.	lb.	.12½ @	
No. 3, U. S. P.	lb.	.12 @	
Corn, crude (bbls.)	lb.	.11½ @	
Cotton, summer yellow	lb.	.12½ @	
Cycline	gal.	.28 @	.38
Glycerine	lb.	.32 @	
Linseed, raw	lb.	.12 @	
Liquid flux	lb.	.10 @	.12
Moldrite	lb.	.06 @	
Palm lagos	lb.	.10 @	
niger	lb.	.09½ @	
Peanut, crude	lb.	.12 @	
refined	lb.	.16 @	
Petrolatum, standard	lb.	.06 @	.08
sticky	lb.	.08 @	.10
Pine, steam distilled	gal.	.64 @	
Plastone	lb	.39 @	
Rapeseed, refined	gal.	.94½ @	
Rosin	gal.	.82 @	
Synthecite	lb.	.06 @	
Tackol	lb.	.09 @	.15
Tar	gal.	.46 @	
Virol	lb.	.10 @	

Resins and Pitches

Pitch, Burgundy	lb.	@	
Coal tar	bbl.	@	
Fluxol hardwood	lb.	$0.02 @	$0.04
Pine tar, retort	bbl.	18.00 @	
ponto	lb.	@	
Rosin, K (bbl.)	280 lbs.	16.30 @	
strained (bbl.)	280 lbs.	16.20 @	
Shellac, fine orange	lb.	.70 @	
Tar, kiln	bbl.	16.00 @	

Solvents

Benzol (90%, 7.21 lbs. gal.) pure	gal.	.30 @	
Carbon bisulphide (10.81 lbs. gal.) 99.9% pure (drums)	lb.	.05½ @	.06¼
tetrachloride (13.28 lbs. gal.) 99.7% pure (drums)	lb.	.06¼ @	.08
Gasoline No. 303			
Tankcars	gal.	.22 @	
Drums, c. l.	gal.	.25 @	
Drums, l. c. l.	gal.	.28 @	
Naphtha			
68° Bé., 112°, 324°	gal.	.20 @	
70° Bé., 114°, 314°	gal.	.20½ @	
71° Bé., 112°, 304°	gal.	.21 @	
Turpentine, spirits	gal.	.96 @	
wood, steam distilled	gal.	.94 @	

Substitutes

Black	lb.	.08½ @	.14
Brown	lb.	.09 @	.15
White	lb.	.09 @	.17

Vulcanizing Ingredients

Sulphur chloride	lb.	.04 @	
Soft rubber, 100% pure (c.l.)	100 lbs.	2.60 @	2.85
(l.c.l.)	100 lbs.	2.90 @	3.15
Sulphur, Brooklyn brands			
Refined velvet (bbls.)	240 lbs.	@	
(bags)	150 lbs.	@	
Superfine flour (bbls.)	100 lbs.	@	
(bags)	100 lbs.	@	
Tire brand, superfine	100 lbs.	@	
Tube brand, velvet	100 lbs.	@	

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	lb.	.55 @	
carnauba	lb.	.38 @	.50
ceresine, white	lb.	.12½ @	
montan	lb.	.07 @	.07½
ozokerite, black	lb.	.30 @	
green	lb.	.32 @	
Paraffin			
122/124 white crude scale	lb.	.05⅞ @	
124/126 white crude scale	lb.	.06 @	
120/122 fully refined	lb.	.06⅛ @	
125/127 fully refined	lb.	.06¼ @	

CAPTAX

Captax is the trade name of an accelerator of the semi-ultra type. It is new on the market although in successful use for a number of years by one of the largest American rubber companies. Chemically it is mercaptobenzothiazole, a product obtained from the reaction of carbon bisulphide, aniline and sulphur. It is non-poisonous either externally or internally; does not discolor and is adapted for use in any kind, color or quality of rubber goods.

LIQUID-FLUX

Liquid-Flux is the new trade name for the rubber softener formerly known as Liquid Rubber. It has been used successfully in the rubber industry since its introduction in 1917. It possesses desirable features not found combined in all softeners. It is a chemical reaction product, not merely a physical mixture and its component ingredients will never separate on standing. It is available in several degrees of viscosity and density, is entirely odorless, will not retard the cure and is advantageously used in compounding rubber stocks for all purposes.

COLORED CREPE OR SHEET RUBBER

Dr. Meyeringh and Wijnand, Dutch inventors, have patented a process for tinting crude rubber in crêpe or sheet form with a paint solution, the solvent of which (benzine, benzol) penetrates the rubber. Sulphur and accelerators with fillers may be added all at once, then the mass is rolled out to the desired form and size. Vulcanization is effected by sunlight heat to a maximum of 60 degrees C. or by the active rays of a quartz lamp.

The product obtained is to be used in the place of linoleum, carpets, etc., and also to replace colored or ordinary window-glass.

AMERICAN EXPORTS OF RUBBER BOOTS INCLUDED FOR THE ELEVEN months ended May, 1926, 758,784 pairs, value $1,805,720. Corresponding exports of rubber shoes totaled 1,127,045 pairs, value $1,006,278.

UNITED STATES EXPORTS OF CANVAS RUBBER-SOLED SHOES TOTALED for the eleven months ended May, 1926, 4,501,103 pairs, value $3,376,247. Figures for the eleven months ended May, 1925, were: 4,044,940 pairs, value $2,902,225.

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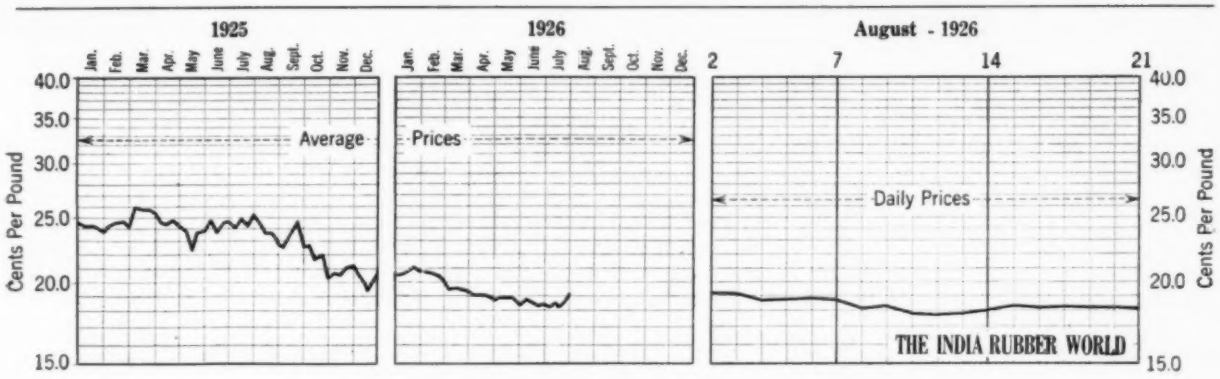


Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. The August market for spot middling was dull and declining the first two weeks. The price August 2 was 19.20 cents, and in the week following the government's heavy July crop report caused a decline which reached its lowest figure of 17.70 cents on August 12. The critical condition of the crop and the uncertainty of weather conditions and insect damage yet to be encountered caused the price to react upward, gaining the 19 cent level on August 24, this position being strengthened by the government crop condition report of the 23rd, which showed a decline of 6.3 per cent within two weeks. The prices at the close of each successive week were as follows: August 7, 18.75 cents; August 14, 18.00 cents; August 21, 18.15 cents, and on August 25, 19.00 cents.

The government's August 1 crop estimate was 15,621,000 bales, that of August 16 was 15,248,000 bales. The reduction was due to the damage by excessive rainfall and insect pests. Private estimates of the crop place it between a minimum of 14,800,000 bales and 16,221,000 bales.

PIMA COTTON. The Arizona Pima crop is reported progressing favorably, although the yield will probably be smaller than last year.

EGYPTIAN COTTON. The staples have on the whole been in poor demand and prices have held steady. Reports from the growing crop in Egypt indicate that Uppers will be early and the crop is in good condition. Sakel, is backward and reports are not satisfactory as to condition of the plants.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market for these goods improved markedly during August and the outlook for fall business is good.

RAINCOAT FABRICS. At present the raincoat trade is very busy on the high color rubber surface coating, the same as used last year. The consumption of fabrics is at present twice the ordinary due to rubberizers operating double shifts.

SHEETING. Prices are holding fairly firm. Due to curtailment the mills are comfortably fixed with orders for the next 30 to 60 days. Buying has dropped off very materially since prices were advanced.

TIRE FABRICS. Fabric mills have been operating at a rate to maintain stocks at a moderately low level. Prices have advanced 1 cent for all grades and hold firm against a rather small demand. Tire plants are working on larger schedules and while there is better interest in fabrics tire manufacturers are slow to make commitments. Less has been heard lately about the use of off-grade cotton. About the middle of August the Akron mills had bought above 4,000,000 pounds of fabric of various styles for August, September and October delivery. The tire fabric manufacturers have become sufficiently optimistic to operate their mills on full single shifts. Fabric sales of over 1,000,000 pounds were reported on the 19th and 20th and prospects indicate advancing prices.

New York Quotations

August 25, 1926

Drills		
38-inch 2.00-yard	yard	$0.17 @
40-inch 3.47-yard		.09⅞ @
52-inch 1.90-yard		.18⅛ @
60-inch 1.52-yard		.22⅜ @
Ducks		
38-inch 2.00-yard	yard	.17 @
40-inch 1.47-yard		.23⅛ @
72-inch 16.66-ounce		.38⅝ @
72-inch 17.21-ounce		.39⅞ @
MECHANICAL		
Hose and belting	pound	.32 @
Specials		.36 @
TENNIS		
52-inch 1.35-yard	yard	.27 @
Hollands		
DEAD FINISH		
Standard, 36-inch	yard	.19½ @
42-inch		.23½ @
FLAT FINISH		
Imperial, 36-inch		.15½ @
40-inch		.17¼ @
RED SEAL		
36-inch		.16 @
40-inch		.17 @
50-inch		.25 @
GOLD SEAL		
40-inch		.23 @

Osnaburgs		
40-inch 2.35-yard	yard	$0.14⅝ @
40-inch 2.48-yard		.13⅞ @
40-inch 3.00-yard		.11½ @
37-inch 2.42-yard		.14¼ @
Raincoat Fabrics		
COTTON		
Bombazine 64 x 60	yard	.11¼ @
Bombazine 60 x 48		.10¾ @
Plaids 60 x 48		.11 @
Plaids 56 x 54		.10¾ @
Surface prints 60 x 48		.11½ @
Surface prints 64 x 60		.12½ @
Sheetings, 40-inch		
48 x 48, 2.50-yard	yard	.12¾ @ .13
48 x 48, 2.85-yard		.11⅞ @ .11¼
64 x 68, 3.15-yard		.12¼ @ .12½
56 x 60, 3.60-yard		.10 @
48 x 44 3.75-yard		.09¾ @ .09¾
Sheetings, 36-inch		
48 x 48, 5.00-yard	yard	.07⅜ @ .07⅝
40 x 40, 6.15-yard		.06 @ .06¼

Tire Fabrics		
SQUARE WOVEN 17¼-ounce		
Egyptian, karded	pound	$0.48 @
Peeler, karded		.41 @
CORD 23/5/3		
Egyptian, combed	pound	.56 @
Egyptian, karded		.48 @
Peeler, combed, 1 1/16-in.		@
Peeler karded, 1 1/16-in.		.43 @
CORD 23/4/3		
Peeler, karded	pound	.44 @
CORD 23/3/3		
Peeler, karded	pound	.50 @
CORD 15/3/3		
Peeler, karded	pound	.41 @
CORD 13/3/3		
Peeler, karded	pound	.40 @
LENO BREAKER		
8-oz. Peeler, karded	pound	.41 @
10-oz. Peeler, karded		.41 @
CHAFER		
8.25-oz. Peeler, karded (2 ply)	pound	@
9.5-oz. Peeler, karded (4-ply)		.46 @
12-oz. Peeler, karded		.43 @
14-oz. Peeler, karded		.41 @

The Cotton Outlook

Cotton Crop Variously Estimated

ESTIMATES by various authorities regarding the 1926 cotton crop have differed greatly in recent weeks, while the publication of the latest government forecast, as of August 16, of 15,248,000 bales, or 63.5 per cent of normal, resulted in an immediate advance in prices of $5 a bale. This latest estimate represents a reduction from previous figures of 373,000 bales, or a cut of 6.3 per cent in fifteen days.

Last year, according to announcements by the Department of Agriculture, 16,103,679 bales were produced and the August 16 condition was 62. If developments during the rest of the season are as unfavorable as during 1921-22-23 the crop-reporting board stated a production of about 14,800,000 bales might be expected. If conditions are as favorable as during 1924-25, production of about 16,221,000 bales may result.

During the first week of August fourteen private reports appeared, their estimates differing so widely both as to condition and amount of the indicated crop that they had less than the usual influence in forming public sentiment as to the probable showing by the government. These reports ranged from 64.5 per cent of normal in the matter of condition to 71.3, while the indicated crop ranged from 14,145,000 bales up to 15,755,000 bales.

The Textile World, August 7, contained the following statement by Dr. Lewis H. Haney, Director of the Business Research Bureau, New York University:

We believe that if the new crop is around 15,000,000 bales, or even if it is as low as 14,750,000, the price of around 17 cents for spot middling cotton at New York would be probable. If the crop were to be as small as 14,000,000 bales, or a little less, a reasonable price would appear to be close to 19 cents, and in our opinion recent quotations have discounted the possibility of such a crop. If, however, the crop were to turn out a large one, as is possible, and run to 16,000,000 bales or over, it seems to us probable that the price might fall as low as 15 cents.

World Standards for Cotton Staples Rejected

Although representatives of the Department of Agriculture and the American cotton trade have failed in their attempt to secure the adoption of world standards for cotton staples during the conference held August 10 in London, they believe some good has been accomplished and are apparently not discouraged by the outcome. They know that while the European representatives attending the conference did not come to any agreement, they are still deeply interested in the matter of standardization, as European textile manufacturers complain that only with great difficulty can they secure the lengths of cotton staple that they want.

The next biennial meeting regarding grade and color of cotton staples will be held in Washington next year, and it is expected that the question of cotton standards will again at that time be brought forward.

World Carryover and Consumption of American Cotton

The following statement appears in a bulletin recently published by The National Association of Cotton Manufacturers:

Estimates of world carryover and world consumption of American cotton, as issued by authorities in the cotton trade, differ more or less each year but this year the discrepancies between them are extraordinary. This is shown by the fact that Henry G. Hester, Secretary of the New Orleans Cotton Exchange, puts the world carryover at 5,101,000 bales, while Alston H. Garside, Director of the Cotton Service of the Merchants National Bank of Boston, puts it tentatively at 6,200,000. Mr. Hester's estimate of world consumption is 14,310,000, while Mr. Garside's preliminary estimate is 13,700,000. All of these figures are exclusive of linters.

The differences between Mr. Hester's and Mr. Garside's figures for the past three years are shown by the following table:

WORLD CARRYOVER

Date	Mr. Garside's Estimate	Mr. Hester's Estimate
July 31, 1924	2,754,000	2,089,000
July 31, 1925	3,592,000	2,715,000
July 31, 1926	6,200,000*	5,101,000

WORLD CONSUMPTION

Season	Mr. Garside's Estimate	Mr. Hester's Estimate
1923-1924	10,926,000	10,598,000
1924-1925	13,142,000	13,366,000
1925-1926	13,700,000*	14,310,000

*Preliminary.

In publishing these figures in a report of the Merchants Bank, Mr. Garside explains the differences between them as follows:

Explanation of Carryover Differences

The differences on carryover are partly due to the fact that Secretary Hester omits from his estimates certain stocks which we include, and are partly caused by the fact that Secretary Hester uses figures from other sources than we accept as to certain stocks which both of us include.

The differences between our consumption estimates and those of Secretary Hester are partly due to the fact that Secretary Hester's figures on consumption by Japan and China are the exports from the United States to those countries whereas our consumption figures for those countries represent the amount of cotton put into the machinery in the mills there as reported by the spinners' associations of Japan and China and checked against our exports to those countries and the changes in stock in transit to and in those countries. As to the consumption of this country and of foreign countries besides Japan and China, our figures differ from Secretary Hester's because of differences in sources. Our final figures on domestic consumption are those issued by the Bureau of the Census.

Decline in American Exports of Raw Cotton

During the fiscal year ended June 30 last, the exports from the United States of raw cotton declined 2.6 per cent in quantity and

The following dealers in cotton goods for the rubber industry are listed in our Buyers' Directory. For complete information see Index to Advertisers on Page 110.

Adams, H. J., Co., The, Akron, Ohio.
Bibb Manufacturing Co., Macon, Georgia.
Brighton Mills, Passaic, New Jersey.
Callaway Mills, Inc., New York, N. Y.
Curran & Barry, New York, N. Y.
Lane, J. H. & Co., New York, N. Y., and Chicago, Illinois.
Lawrence & Co., New York, N. Y.
Salmon Falls Manufacturing Co., Boston, Massachusetts.
United States Knitting Co., Pawtucket, Rhode Island.
Willingham Cotton Mills, Macon, Georgia.

15.6 per cent in value as compared with the corresponding period representing the year previous. The value was $148,897,000 below that of the preceding twelve months, the number of bales being 7,991,000 as against 8,205,000 the year before. The decline was especially marked during the first quarter of the present year, the loss being 30.4 per cent in quantity as compared with the three months period of the year previous, with a falling-off in value of 41.5 per cent.

REPORT OF RIMS INSPECTED AND APPROVED BY THE TIRE AND RIM ASSOCIATION OF AMERICA, INC.

Rim Size	July, 1926 Number	July, 1926 Per Cent	Seven Months, 1926 Number	Seven Months, 1926 Per Cent
Motorcycle Rims				
24 x 3	619	0.0	16,354	0.1
26 x 3	5,185	0.2	55,151	0.3
28 x 3	575	0.0	2,952	0.0
Clincher Rims				
30 x 3	.....	...	2,302	0.0
30 x 3½	95,810	4.5	1,880,659	12.3
31 x 4	14,857	0.7	30,466	0.2
Balloon Rims				
25 x 3½	.....	...	722	0.0
26 x 3½	76,383	3.6	122,672	0.8
27 x 3½	3,726	0.2	3,855	0.0
28 x 3½	1,009,388	47.8	6,337,892	41.4
29 x 3½	.....	...	.....	...
27 x 4	8	0.0	92	0.0
28 x 4	195,733	9.2	1,718,102	11.2
29 x 4	289,227	13.6	2,069,607	13.2
30 x 4	1,299	0.1	6,100	0.0
27 x 4½	111	0.0	111	0.0
29 x 4½	17,782	0.8	269,098	1.5
30 x 4½	131,282	6.2	978,006	6.4
31 x 4½	3,239	0.1	27,130	0.2
30 x 5	27,051	1.3	182,788	1.1
31 x 5	23,765	1.1	282,686	1.2
33 x 6	9,427	0.4	74,102	0.5
High Pressure Rims				
30 x 3½	14,814	0.7	97,797	0.6
32 x 3½	1,286	0.1	6,152	0.0
31 x 4	320	0.0	10,503	0.1
32 x 4	16,369	0.8	105,630	0.7
33 x 4	4,390	0.2	8,565	0.1
34 x 4	54	0.0	54	0.0
32 x 4½	33,224	1.5	265,865	1.7
33 x 4½	198	0.0	794	0.0
34 x 4½	1,358	0.1	17,814	0.1
Truck, 20-inch				
30 x 5	115,304	5.4	478,902	3.1
32 x 6	11,343	0.5	126,691	0.8
34 x 7	1,272	0.1	27,489	1.8
36 x 8	.....	...	5,690	0.0
40 x 10	215	0.0	404	0.0
Truck, 24-inch				
34 x 5	11,051	0.5	34,263	0.2
36 x 6	5,614	0.3	52,092	0.3
38 x 7	.....	...	10,592	0.1
40 x 8	1,088	0.0	7,056	0.0
44 x 10	.....	...	559	0.0
36 x 7	.....	...	1,186	0.0
Total	2,123,367	100.0	15,318,945	100.0

Experimental	160		Per Cent
26 x 4			
Motorcycle	0.2	Motorcycle	0.4
Clincher	5.2	Clincher	12.5
Balloon SS	84.4	Balloon SS	77.5
High Pressure	3.4	High Pressure	3.3
Truck—20-inch	6.0	Truck—20-inch	5.7
Truck—24-inch	0.8	Truck—24-inch	0.6

Note—3,000 of the 26 x 3 M. C. rims are 3" auto section.

AMERICAN EXPORTS OF RUBBER HOSE HAVE RISEN FROM A TOTAL for the eleven months ended May, 1925, of 4,208,041 pounds, value $1,615,926, to 5,467,422 pounds, value $2,245,162, the figures for the eleven months ended May, 1926. Rubber belting shipments have increased respectively from 3,397,045 pounds, value $1,933,906 to 3,768,679 pounds, value $2,441,869.

COMPARISON OF THE TIRE PRODUCTION STATISTICS OF THE RUBBER Association of America with the preliminary Census returns (as published in the Commerce Yearbook) for 1925 includes the following: (casings) Census, 57,481,000, Rubber Association, 45,633,316; (inner tubes) Census, 73,585,000 Rubber Association, 61,960,526; (solid tires) Census, 1,024,000, Rubber Association, 758,900.

Metal Market Review

New York

Throughout August considerable strength and steadiness continued to characterize most of the metal markets, with price changes relatively unimportant. Copper is slowly showing improvement, although the foreign demand is light. The zinc market has been quiet, while the price level for lead has continued throughout August at 8.90 cents a pound, New York. It is confidently predicted that steel production will be higher this year than last, with a gain at present for the first eight months of 1926 of almost 10 per cent as compared with the corresponding period of 1925.

ALUMINUM. Prices continue unchanged, while the market for remelted metal is easy. Norwegian, Swiss, and German aluminum has been arriving in fair-sized tonnages.

ANTIMONY. The market is stronger, with grade C spot held at 18 to 18¼ cents, and Chinese brands are quoted at 15½ to 16 cents.

COPPER. A recent decline in the London copper market has had its effect in the United States, although all statistical factors seem to justify higher prices. Copper exports during the first seven months of this year totaled 238,448 tons.

LEAD. The domestic market has shown a gradual improvement in lead buying, while reports from the Joplin district are that for several weeks shipments have exceeded output. For the seven months ended July 31, 1926, lead production for the world is said to have amounted to 836,367 tons, or 119,481 tons monthly, as compared with a monthly average of 106,005 tons for the entire year 1925.

STEEL. The consumption of steel keeps at a high rate, with a gain at present of almost 50 per cent over the best of the pre-war figures. The steady renewal of large steel requirements from widely diversified channels and the continuing reports of production increases are serving to keep the August record of the iron and steel industry closely in line with the unprecedented volume of business of June and July.

TIN. The statistical position of this metal is unusually good, with low surplus stocks, and no increase in production. This year the consumption of tin has been remarkably heavy.

ZINC. During the last of August there was a revival of interest in this metal, due to the belief that prices will be higher within the next few weeks. According to the American Bureau of Metal Statistics, the ratio of American production of zinc has risen since 1914 from one-third of the world production to one-half, with an output for 1925 of 590,928 short tons.

Basic Metals

AUGUST 25, 1926

	Cents per pound	
Aluminum, virgin, 98@99 per cent	27.00	@
Antimony	16.00	@
Copper—Lake, spot	14.50	@
Electrolytic, spot	14.375	@
Castings, refinery	13.625	@
Lead, spot, New York	8.85	@ 8.90
Lead, spot, East St. Louis	8.70	@ 8.75
Nickel, ingot, pound	35.00	@
Tin, spot	65.00	@
Zinc, spot, New York	7.75	@ 7.775
Zinc, spot, East St. Louis	7.40	@ 7.425

Steel Wire

	Base per 100 lbs.	
Bright, plain wire No. 9 gage	$2.50	@
Annealed fence wire	2.65	@
Galvanized wire No. 9	3.10	@
Spring wire	3.50	@

Copper Wire

BASE PRICE F. O. B. FACTORY

	Cents per pound	
Bare copper wire	16.50	@
No. 6. B. & S. gage	16.50	@
No. 8 B. & S. gage	16.50	@
No. 14 B. & S.	17.50	@

United Kingdom Rubber Statistics

Imports

UNMANUFACTURED	June, 1926		Six Months Ended June, 1926	
Crude Rubber From—	Pounds	Value	Pounds	Value
Straits Settlements	8,853,700	£785,251	63,065,800	£7,826,468
Federated Malay States	5,172,000	463,399	29,418,900	3,471,219
British India	807,400	73,488	6,143,300	808,062
Ceylon and Dependencies	2,922,300	251,648	21,098,700	2,584,608
Other Dutch possessions in Indian Seas	3,110,900	284,534	8,819,100	1,036,720
Dutch East Indies (except other Dutch possessions in Indian Seas)	3,151,700	279,325	13,760,900	1,622,258
Other countries in East Indies and Pacific, not elsewhere specified	230,100	21,671	1,093,600	128,744
Brazil	648,400	47,347	5,500,900	675,289
Peru	20,100	1,461	83,400	7,291
South and Central America (except Brazil and Peru)	1,900	142	74,200	9,162
West Africa:				
French West Africa	42,600	1,404	1,307,800	117,861
Gold Coast	43,500	2,525	599,800	43,405
Other parts of West Africa	49,000	4,101	956,900	102,232
East Africa, including Madagascar	126,100	10,655	805,300	89,777
Other countries	120,000	10,419	743,400	97,013
Totals	25,299,700	£2,237,370	153,472,000	£18,620,109
Waste and reclaimed rubber	456,400	7,060	3,701,000	72,123
Gutta percha and balata	635,400	68,059	4,220,900	569,035
Rubber substitutes	11,100	645	58,800	3,018
Totals	26,402,600	£2,313,134	161,452,700	£19,264,285
MANUFACTURED				
Boots and shoes...*doz. pairs*	39,436	£82,598	229,616	£453,017
Tires and tubes				
Pneumatic				
Outer covers	.....	197,278	.....	2,049,077
Inner tubes	.....	74,385	.....	355,366
Solid tires	.....	28,187	.....	164,819
Other rubber manufactures	.....	126,203	.....	861,641
Totals	.....	£508,651	.....	£3,883,920

Exports

UNMANUFACTURED				
Waste and reclaimed rubber	1,457,400	£19,964	12,788,700	£170,679
Rubber substitutes	27,000	516	494,800	11,411
Totals	1,484,400	£20,480	13,283,500	£182,090
MANUFACTURED				
Boots and shoes...*doz. pairs*	16,423	£26,120	110,357	£169,118
Tires and tubes				
Pneumatic				
Outer covers	.....	283,480	.....	1,659,136
Inner tubes	.....	61,075	.....	349,878
Solid tires	.....	31,351	.....	220,334
Other rubber manufactures	.....	250,444	.....	1,517,492
Totals	.....	£652,470	.....	£3,915,958

Exports—Colonial and Foreign

UNMANUFACTURED	June, 1926		Six months Ended June, 1926	
Crude Rubber From—	Pounds	Value	Pounds	Value
Russia	2,202,900	£387,558	7,599,000	£1,411,573
Sweden, Norway and Denmark	147,500	17,183	1,177,600	163,343
Germany	1,012,100	99,205	5,764,300	747,019
Belgium	155,300	15,288	1,236,300	166,320
France	1,461,500	147,502	12,502,000	1,744,641
Spain	40,000	4,832	435,200	70,085
Italy	316,500	37,723	4,696,500	696,423
Other European countries	150,200	17,360	734,400	107,425
United States	6,585,800	862,733	29,730,600	4,696,247
Canada	.....	.....	29,200	5,396
Other countries	25,000	2,863	304,400	53,436
Totals	12,097,400	£1,592,247	64,209,500	£9,861,908
Waste and reclaimed rubber	6,500	295	128,300	4,262
Gutta percha and balata	36,300	4,214	179,900	26,317
Rubber substitutes	.....	.....	.....	.....
Totals	12,140,200	£1,596,756	64,517,700	£9,892,487
MANUFACTURED				
Boots and shoes ...*doz. pairs*	1,733	£3,617	3,875	£10,260
Tires and tubes				
Pneumatic				
Outer covers	.....	35,002	.....	187,357
Inner tubes	.....	4,938	.....	30,238
Solid tires	.....	2,228	.....	9,635
Other rubber manufactures	.....	5,162	.....	35,623
Totals	.....	£50,947	.....	£273,113

Dominion of Canada Rubber Statistics

Imports of Crude and Manufactured Rubber

UNMANUFACTURED	May, 1926 Pounds	May, 1926 Value	Two Months Ended May, 1926 Pounds	Two Months Ended May, 1926 Value
Rubber, gutta percha, etc.				
From United States	2,459,815	$1,297,550	5,745,093	$3,165,257
Straits Settlements	270,980	127,165	575,611	327,336
Dutch East Indies	44,757	27,349	81,431	51,232
Other countries	.....	.....	11,200	15,600
Totals	2,775,552	$1,452,064	6,413,335	$3,559,424
Rubber, recovered	721,180	$117,086	1,164,491	$171,813
Rubber, powdered and rubber or gutta percha scrap	356,326	19,316	1,006,329	53,653
Balata	893	702	893	702
Rubber substitutes	57,863	5,026	125,538	12,136
Totals	1,136,262	$142,130	2,297,251	$238,298
PARTLY MANUFACTURED				
Hard rubber sheets and rods	14,877	$8,523	22,167	$13,690
Hard rubber tubes	.....	85	.....	748
Rubber thread not covered	10,169	16,907	24,496	42,040
Totals	25,046	$25,315	46,663	$56,478
MANUFACTURED				
Belting	.....	$20,457	.....	$35,588
Hose	.....	16,549	.....	34,755
Packing	.....	2,705	.....	7,338
Boots and shoes.....*pairs*	401	2,318	936	3,518
Clothing, including waterproofed	.....	24,619	.....	52,706
Gloves	.....	2,434	.....	3,433
Hot water bottles	.....	1,102	.....	1,544
Tires, solid .....*number*	82	3,411	180	8,038
Tires, pneumatic .....*number*	4,215	28,677	7,332	46,678
Tires, tubes .....*number*	1,018	2,800	3,476	9,193
Elastic, round or flat	.....	15,308	.....	29,997
Mats and matting	.....	4,552	.....	6,856
Cement	.....	10,093	.....	13,444
Golf balls .....*dozen*	8,251	34,024	13,092	51,503
Heels, rubber .....*pairs*	17,047	1,203	32,267	2,416
Other rubber manufactures	.....	125,864	.....	244,868
Totals	.....	$296,106	.....	$551,875
Totals, rubber imports	.....	$1,915,615	.....	$4,406,075

Exports of Domestic and Foreign Rubber Goods

UNMANUFACTURED	May, 1926 Produce of Canada Value	May, 1926 Re-exports of Foreign Goods Value	Two Months Ended May, 1926 Produce of Canada Value	Two Months Ended May, 1926 Re-exports of Foreign Goods Value
Crude and waste rubber	$31,556	.....	$41,277	.....
Totals	$31,556	.....	$41,277	.....
MANUFACTURED				
Belting	$35,791	.....	$78,095	.....
Canvas shoes with rubber soles	305,491	.....	538,505	.....
Boots and shoes	67,395	.....	162,515	.....
Clothing, including waterproofed	2,798	.....	8,306	.....
Hose	17,693	.....	37,663	.....
Tires, casings	1,081,514	.....	2,286,888	.....
Inner tubes	208,980	.....	438,473	.....
Solid	20,738	.....	34,841	.....
Other rubber manufactures	44,112	$17,911	95,725	$28,321
Totals	$1,784,512	$17,911	$3,681,011	$28,321
Totals, rubber exports	$1,816,068	$17,911	$3,722,288	$28,321

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During the Month of June, 1926

	Landed for June Tons	Delivered for June Tons	Stocks, June 30 1926 Tons	1925 Tons	1924 Tons
LONDON:					
Plantation	9,902	6,325	23,776	*5,143	50,851
Other grades	49	23	153	*58	115
LIVERPOOL:					
Plantation	†365	†418	†1,028	†306	†4,132
Pará and Peruvian	107	120	385	180	677
Other grades	....	....	2	20	210
Total tons, London and Liverpool	10,423	6,886	25,344	5,707	55,985

* Corrected by Inspection.
† Official returns from the six recognized public warehouses.

American Exports of Rubber Goods—First Half of 1926

During the first six months of the present year the United States, according to *Commerce Reports*, has exported rubber products to the value of $32,944,401, an increase of nearly 30 per cent over the first half of 1925. Except in mechanical rubber goods and rubber footwear the volume of business has however declined, the downward trend being especially evident since March, a period which last year was showing an increase in shipments. The figure this year for the June exports, at $4,578,758, is lower than for any other month of 1926.

Shipments of automobile casings for the six months in question totaled in number 732,324, as against 803,790 for the first half of 1925, while exports of inner tubes were respectively 582,128 and 723,969, a decided falling off for both classes of goods. Values this year, however, are higher, that for casings averaging $17.86 as against $11.72 in 1925, the figure for inner tubes being $2.85, as compared with $1.72 for 1925. Argentina now represents the leading market for tires, followed by the United Kingdom, Cuba, Japan, Australia, Brazil and Germany.

There has been an excellent business in rubber footwear, particularly in canvas rubber-soled shoes and rubber soles and heels, with a growing market for rubber shoes. Sales of rubber boots have, however, declined. The demand has also been most satisfactory for mechanical rubber goods, exports of belting, hose, and packing being well in advance of those for 1925. Shipments of druggists' rubber sundries, rubber toys and balloons, and hard rubber goods have all, however, shown a falling-off, while the quantity of scrap rubber exported this year is much less than that of last year. Sales of rubber thread this season have, however, been unusually high, while exports of reclaimed rubber have greatly advanced.

UNITED STATES EXPORTS OF RUBBER PRODUCTS

Article	First Half of 1925 Quantity	First Half of 1925 Value	First Half of 1926 Quantity	First Half of 1926 Value
Automobile casings...number	803,790	$9,427,601	732,324	$13,081,467
Automobile inner tubes..number	723,969	1,244,396	582,128	1,660,737
Other casings and tubes.number	56,967	139,738	43,770	144,794
Automobile solid tires..number	55,040	1,414,918	56,520	2,047,642
Other solid tires.....pounds	593,328	129,168	777,835	270,424
Tire repair materials..pounds	.....	464,514	.....	828,794
Rubber boots .....pair	347,784	845,452	259,265	705,963
Rubber shoes .....pair	350,486	314,378	491,036	431,085
Canvas rubber-soled shoes..pair	2,346,461	1,672,977	2,634,459	2,066,331
Rubber heels and soles..pounds	1,572,243	486,530	1,968,167	640,268
Rubber belting .....pounds	1,967,171	1,125,695	2,029,971	1,371,477
Rubber hose .....pounds	2,627,460	1,001,693	3,267,986	1,361,923
Rubber packing .....pounds	797,361	362,849	1,058,674	548,331
Friction tape .....pounds	.....	.....	462,289	151,584
Water bottles and syringes, number	125,100	83,599	95,005	68,361
Rubber gloves .....dozen	.....	.....	32,952	123,475
Other druggists' sundries.....	.....	437,516	.....	280,115
Bathing caps .....dozen	140,494	231,877	112,962	243,927
Toys and balloons.....	.....	697,090	.....	404,491
Rubber bands and erasers, pounds	.....	.....	299,064	243,063
Electrical hard-rubber goods, pounds	477,217	149,191	342,616	135,312
Other hard rubber goods.....	.....	328,088	.....	205,716
Rubber thread .....pounds	677,912	787,141	886,218	1,205,956
Reclaimed rubber .....pounds	4,599,023	433,883	5,957,453	739,911
Scrap rubber .....pounds	17,315,263	732,507	13,382,184	881,147
Other rubber manufactures, pounds	.....	1,346,422	.....	1,226,067
Total to foreign countries.	.....	$23,857,173	.....	$31,068,361
Exports to non-contiguous territories	.....	1,635,529	.....	1,876,040
Grand total.....	.....	$25,492,702	.....	$32,944,401

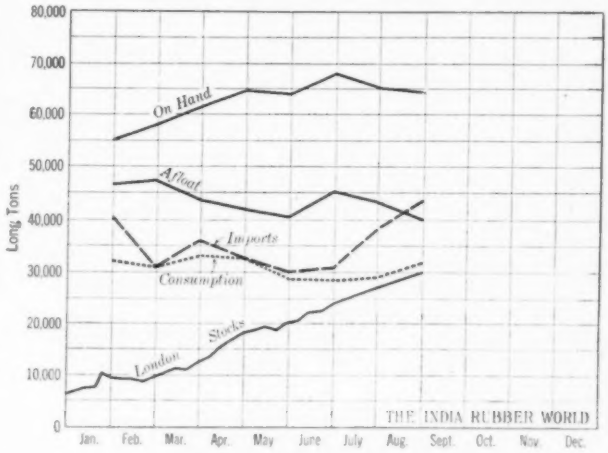
Rubber Imports, Consumption and Stocks

The graph below covers the rubber supply and consumption for the current year including estimated figures for August.

Observation of the various curves on the chart shows that the rubber supply statistical situation will be well maintained in August. Stocks on hand have declined slightly. Those afloat have fallen off about 3,000 tons in the movement to adjust market stocks. Imports are considerably in advance of consumption because of heavy buying to maintain last quarter's average price above 21*d*.

London stocks continue to advance at the rate which has prevailed since the latter part of February. The curve of consumption shows a distinct rise for August due to the general increase in tire schedules and the improved activity in all other manufacturing divisions of the rubber industry. Manufacturers will observe with interest the course of imports, consumption and stocks for the next three months as to their effect on the critical price of restriction for next quarter. The conviction is general in American rubber circles that 20 per cent restriction will be imposed November 1 but this probability has no present disturbing effect.

The figures in the following table are shown above in graphic form.



Graph of U. S. Crude Rubber Imports, Consumption and Stocks

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

	Imports Tons	Consumption Tons	Stocks: On Hand Tons	Stocks: Afloat Tons	Stocks: London Tons	Stocks: Singapore and Penang Tons
1925						
Twelve months....	388,000	385,000	51,000*	48,000*	.....	.....
1926						
January	40,500	32,000	55,000	46,300	10,100	15,726†
February	31,000	31,000	58,000	47,000	9,100	13,653
March	36,000	33,000	61,500	43,500	12,800	18,389
April	32,700	32,500	64,400	41,900	18,500	16,328
May	36,000	29,000	64,000	40,300	20,200	16,848
June	30,000	28,600	60,466	40,907	23,800	19,400
July	38,000	27,600	65,000	43,000	27,857	.....
August (estimated)	32,000	33,000	64,006	40,000	‡‡29,678	.....

*December 31, 1925.
†The first of each month.
‡‡August 21, 1926.

United States Crude and Waste Rubber Imports for 1926 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Manicobas and Matto Grosso	Total 1926	Total 1925	Balata	Miscellaneous	Waste
January ..... *tons*	36,372	856	791	515	153	10	38,697	29,960	94	607	1,227
February	31,832	1,548	227	250	204	6	34,067	23,456	19	728	729
March	40,177	1,426	334	256	482	2	42,677	33,914	30	1,264	324
April	30,766	854	164	392	404	8	32,678	27,231	35	864	216
May	27,918	1,431	199	449	417	..	30,411	36,889	52	932	173
June	27,915	960	246	568	418	..	30,107	30,337	41	1,076	208
July	35,537	800	36	419	295	..	37,087	33,918	10	1,141	372
Totals, 7 months, 1926.*tons*	230,514	7,875	1,997	2,849	2,463	26	245,724	.....	281	6,612	3,249
Totals, 7 months, 1925....	201,546	9,066	1,911	1,275	1,849	58	.....	215,705	242	7,331	1,572

Compiled from statistics supplied by the Rubber Association of America, Inc.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
JULY 17. By "Cape Camorin," Para					
H. A. Astlett & Co.	...	...	74	15	...
JULY 26. By "Stephen," Brazil.					
H. A. Astlett & Co.	185	1	5	10	...
Paul Bertuch & Co., Inc.	...	...	...	130	...
General Rubber Co.	179	2	134	206	27
L. Littlejohn & Co., Inc.	341	...	42	125	...
Poel & Kelly, Inc.	154	...	48	...	...
AUGUST 10. By "Sardinian Prince," Bolivia.					
Paul Bertuch & Co., Inc.	60	...	6	...	...
AUGUST 10. By "Swinburne," Brazil.					
H. A. Astlett & Co.	263	3	56	4	...
Paul Bertuch & Co., Inc.	155	...	...	195	...
General Rubber Co.	159	1	116	55	52
L. Littlejohn & Co., Inc.	298	...	43	...	...
Meyer & Brown, Inc.	...	...	...	70	...
Poel & Kelly, Inc.	7	...	...	...	...

Plantations

	Cases
JULY 13. By "Agamemnon," Far East.	
Rogers Brown & Crocker Bros., Inc.	631
JULY 15. By "Pres. Adams," Far East.	
Paul Bertuch & Co., Inc.	120
Rogers Brown & Crocker Bros., Inc.	1,040
Charles T. Wilson Co., Inc.	507
JULY 16. By "Gothic Prince," Far East.	
Paul Bertuch & Co., Inc.	30
General Rubber Co.	3,981
L. Littlejohn & Co., Inc.	3,513
Meyer & Brown, Inc.	1,797
H. Muehlstein & Co., Inc.	1,383
Poel & Kelly, Inc.	1,235
Rogers Brown & Crocker Bros., Inc.	120
Charles T. Wilson Co., Inc.	2,272
JULY 17. By "Kathlamba," Singapore.	
H. A. Astlett & Co.	1,144
Baird Rubber & Trading Co., Inc.	2,432
General Rubber Co.	1,232
Haldane Bierrie & Co., Inc.	200
L. Littlejohn & Co., Inc.	2,160
Meyer & Brown, Inc.	1,817
Poel & Kelly, Inc.	2,427
Rogers Brown & Crocker Bros., Inc.	250
Charles T. Wilson Co., Inc.	364
JULY 17. By "Silverfir," Far East.	
General Rubber Co.	4,928
JULY 19. By "Atreus," Far East.	
H. A. Astlett & Co.	418
Baird Rubber & Trading Co., Inc.	180
General Rubber Co.	4,398
L. Littlejohn & Co., Inc.	1,693
Meyer & Brown, Inc.	3,634
Poel & Kelly, Inc.	990
Rogers Brown & Crocker Bros., Inc.	563
Charles T. Wilson Co., Inc.	300
JULY 19. By "Caronia," Far East.	
General Rubber Co.	820
Poel & Kelly, Inc.	103
JULY 19. By "Minnekahda," Far East.	
H. A. Astlett & Co.	25
General Rubber Co.	50
Poel & Kelly, Inc.	105
Charles T. Wilson Co., Inc.	930
JULY 20. "Laconia," London.	
Hood Rubber Co.	49
Charles T. Wilson Co., Inc.	231
JULY 20. By "Malayan Prince," Far East.	
H. A. Astlett & Co.	2,992
Baird Rubber & Trading Co., Inc.	2,336
General Rubber Co.	5,402
Haldane Bierrie & Co., Inc.	800
Hood Rubber Co.	*376
L. Littlejohn & Co., Inc.	5,441
Meyer & Brown, Inc.	3,245
H. Muehlstein & Co., Inc.	925
Poel & Kelly, Inc.	1,275
Rogers Brown & Crocker Bros., Inc.	690
Charles T. Wilson Co., Inc.	696
JULY 21. By "Nevisian," London.	
Hood Rubber Co.	*111
JULY 22. By "Edenton," Far East.	
H. A. Astlett & Co.	21
Baird Rubber & Trading Co., Inc.	761
Paul Bertuch & Co., Inc.	60
General Rubber Co.	71
L. Littlejohn & Co., Inc.	211
Meyer & Brown, Inc.	472
Poel & Kelly, Inc.	235
JULY 22. By "Steel Navigator," Far East.	
H. A. Astlett & Co.	1,469
Baird Rubber & Trading Co., Inc.	1,128
General Rubber Co.	4,701
Haldane Bierrie & Co., Inc.	50
L. Littlejohn & Co., Inc.	1,173
Meyer & Brown, Inc.	*192
Meyer & Brown, Inc.	1,285
H. Muehlstein & Co., Inc.	350
Poel & Kelly, Inc.	348
Raw Products Co.	67
Rogers Brown & Crocker Bros., Inc.	470
Charles T. Wilson Co., Inc.	524
JULY 22. By "Stockwell," Far East.	
Hood Rubber Co.	*213
H. Muehlstein & Co., Inc.	496
Charles T. Wilson Co., Inc.	392
JULY 24. By "Forresbank," Far East.	
H. A. Astlett & Co.	1,032
Baird Rubber & Trading Co., Inc.	598
General Rubber Co.	2,127
L. Littlejohn & Co., Inc.	951
Meyer & Brown, Inc.	*50
Meyer & Brown, Inc.	865
H. Muehlstein & Co., Inc.	350
Poel & Kelly, Inc.	798
Raw Products Co.	110
Rogers Brown & Crocker Bros., Inc.	900
Charles T. Wilson Co., Inc.	59
JULY 24. By "Pres. Pierce," Far East.	
Baird Rubber & Trading Co., Inc.	†192
JULY 25. By "Nieuw Amsterdam," Holland.	
General Rubber Co.	107
L. Littlejohn & Co., Inc.	54
JULY 26. By "Albert Ballin," London.	
Charles T. Wilson Co., Inc.	48
JULY 26. By "Franconia," London.	
Baird Rubber & Trading Co., Inc.	109
JULY 26. By "Minnetonka," London.	
Baird Rubber & Trading Co., Inc.	106
General Rubber Co.	3,992
JULY 28. By "Bewes Castle," Far East.	
H. A. Astlett & Co.	703
Baird Rubber & Trading Co., Inc.	507
General Rubber Co.	8,397
Haldane Bierrie & Co., Inc.	100
L. Littlejohn & Co., Inc.	2,412
Meyer & Brown, Inc.	1,380
H. Muehlstein & Co., Inc.	840
Poel & Kelly, Inc.	822
Raw Products Co.	65
Rogers Brown & Crocker Bros., Inc.	1,770
Charles T. Wilson Co., Inc.	839
JULY 29. By "Pres. Garfield," Far East.	
H. A. Astlett & Co.	2,270
Baird Rubber & Trading Co., Inc.	1,066
Paul Bertuch & Co., Inc.	50
General Rubber Co.	1,907
Hood Rubber Co.	*490
L. Littlejohn & Co., Inc.	4,125
Meyer & Brown, Inc.	1,090
H. Muehlstein & Co., Inc.	602
Poel & Kelly, Inc.	474
Rogers Brown & Crocker Bros., Inc.	996
JULY 30. By "Rotterdam," Rotterdam.	
H. A. Astlett & Co.	62
Charles T. Wilson Co., Inc.	906
JULY 30. By "Silver Elm," Far East.	
H. A. Astlett & Co.	678
Baird Rubber & Trading Co., Inc.	350
Paul Bertuch & Co., Inc.	95
General Rubber Co.	5,604
L. Littlejohn & Co., Inc.	1,760
Meyer & Brown, Inc.	1,308
Poel & Kelly, Inc.	84
Rogers Brown & Crocker Bros., Inc.	579
Charles T. Wilson Co., Inc.	910
AUGUST 2. By "Adriatic," Liverpool.	
Baird Rubber & Trading Co., Inc.	120
AUGUST 2. By "American Shipper," London.	
H. A. Astlett & Co.	190
Baird Rubber & Trading Co., Inc.	100
General Rubber Co.	56
Poel & Kelly, Inc.	156
Charles T. Wilson Co., Inc.	208
AUGUST 2. By "Vechtdyk," Far East.	
H. A. Astlett & Co.	803
Baird Rubber & Trading Co., Inc.	245
General Rubber Co.	2,624
Haldane Bierrie & Co., Inc.	141
L. Littlejohn & Co., Inc.	1,967
Meyer & Brown, Inc.	1,426
H. Muehlstein & Co., Inc.	204
Poel & Kelly, Inc.	1,449
Rogers Brown & Crocker Bros., Inc.	46
Charles T. Wilson Co., Inc.	550
AUGUST 4. By "Lycaon," Far East.	
H. A. Astlett & Co.	4,482
Baird Rubber & Trading Co., Inc.	1,616
Baird Rubber & Trading Co., Inc.	*750
Paul Bertuch & Co., Inc.	153
General Rubber Co.	6,326
Haldane Bierrie & Co., Inc.	480
Hood Rubber Co.	*306
L. Littlejohn & Co., Inc.	3,852
Meyer & Brown, Inc.	4,100
H. Muehlstein & Co., Inc.	1,240
Poel & Kelly, Inc.	1,554
Raw Products Co.	106
Charles T. Wilson Co., Inc.	794
AUGUST 6. By "City of Edinburgh," Far East.	
General Rubber Co.	53
Meyer & Brown, Inc.	150
Poel & Kelly, Inc.	104
AUGUST 6. By "Esther Dollar," Far East.	
Baird Rubber & Trading Co., Inc.	‡48
AUGUST 7. By "Matheran," Far East.	
H. A. Astlett & Co.	160
Baird Rubber & Trading Co., Inc.	280
Hood Rubber Co.	*170
L. Littlejohn & Co., Inc.	185
Meyer & Brown, Inc.	783
H. Muehlstein & Co., Inc.	351
Poel & Kelly, Inc.	33
Rogers Brown & Crocker Bros., Inc.	56
Charles T. Wilson Co., Inc.	504
AUGUST 9. By "Bordeaux Maru," Far East.	
H. A. Astlett & Co.	485
Baird Rubber & Trading Co., Inc.	1,605
General Rubber Co.	1,407
Hood Rubber Co.	*140
L. Littlejohn & Co., Inc.	990
Meyer & Brown, Inc.	1,677
Meyer & Brown, Inc.	*150
H. Muehlstein & Co., Inc.	239
Poel & Kelly, Inc.	1,730
Raw Products Co.	100
Charles T. Wilson Co., Inc.	417
AUGUST 9. By "Deutschland," Amsterdam.	
Charles T. Wilson Co., Inc.	62
AUGUST 9. By "Cedric," Liverpool.	
Baird Rubber & Trading Co., Inc.	74
AUGUST 9. By "Haleric," Far East.	
L. Littlejohn & Co., Inc.	1,148
H. Muehlstein & Co., Inc.	112
Poel & Kelly, Inc.	30
Charles T. Wilson Co., Inc.	728
AUGUST 9. By "Samarinda," Far East.	
H. A. Astlett & Co.	264
Baird Rubber & Trading Co., Inc.	258
General Rubber Co.	1,468
Hood Rubber Co.	*133
L. Littlejohn & Co., Inc.	1,226
Meyer & Brown, Inc.	1,097
Meyer & Brown, Inc.	*42
Poel & Kelly, Inc.	558
Raw Products Co.	51
Rogers Brown & Crocker Bros., Inc.	185
AUGUST 9. By "Tuscania," England.	
L. Littlejohn & Co., Inc.	317
Poel & Kelly, Inc.	693
AUGUST 9. By "Scythia," London.	
Charles T. Wilson Co., Inc.	50
AUGUST 10. By "Javanese Prince," Far East.	
H. A. Astlett & Co.	1,766
Baird Rubber & Trading Co., Inc.	1,546
Baird Rubber & Trading Co., Inc.	*100
General Rubber Co.	8,597
Haldane Bierrie & Co., Inc.	200
Hood Rubber Co.	*624
L. Littlejohn & Co., Inc.	2,355
Meyer & Brown, Inc.	4,004
H. Muehlstein & Co., Inc.	400
Poel & Kelly, Inc.	1,107
Rogers Brown & Crocker Bros., Inc.	3,496
Charles T. Wilson Co., Inc.	2,898
AUGUST 10. By "Minnewaska," London.	
Baird Rubber & Trading Co., Inc.	584
General Rubber Co.	2,159
Meyer & Brown, Inc.	152
H. Muehlstein & Co., Inc.	168
Charles T. Wilson Co., Inc.	848
Bowring & Co.	70
AUGUST 12. By "Karroo," Far East.	
General Rubber Co.	22
Haldane Bierrie & Co., Inc.	100
Hood Rubber Co.	*264

* Arrived at Boston.
† Arrived at Los Angeles.
‡ Arrived at San Francisco.

	Cases
L. Littlejohn & Co., Inc.	1,134
Meyer & Brown, Inc.	33
H. Muehlstein & Co., Inc.	66
Peel & Kelly, Inc.	132
Raw Products Co.	334
Charles T. Wilson Co., Inc.	231
AUGUST 12. By "Titan," Far East.	
H. A. Astlett & Co.	975
Baird Rubber & Trading Co., Inc.	1,160
Baird Rubber & Trading Co., Inc.	*200
Paul Bertuch & Co., Inc.	120
General Rubber Co.	2,704
Haldane Bierrie & Co., Inc.	500
Hood Rubber Co.	*721
L. Littlejohn & Co., Inc.	2,502
Meyer & Brown, Inc.	850
H. Muehlstein & Co., Inc.	219

* Arrived at Boston.

	Cases
Peel & Kelly, Inc.	1,204
Rogers Brown & Crocker Bros., Inc.	306
Charles T. Wilson Co., Inc.	1,038

Africans

JULY 25. By "Beckenheim," Germany.	
L. Littlejohn & Co., Inc.	331

Balata

JULY 26. By "Stephen," Brazil.	
H. A. Astlett & Co.	171
Paul Bertuch & Co., Inc.	95
AUGUST 10. By "Swinburne," Brazil.	
Paul Bertuch & Co., Inc.	32

Centrals

	Cases
JULY 19. By "Esparta," Nicaragua.	
H. A. Astlett & Co.	21

Guayule

JULY 18. By "Agwistar," Mexico.	
Baird Rubber & Trading Co., Inc.	560
JULY 24. By "Monterey," Mexico.	
Continental Rubber Co. of New York	1,680
AUGUST 3. By "Camaguey," Mexico.	
Continental Rubber Co. of New York	560
AUGUST 7. By "Mexico," Mexico.	
Continental Rubber Co. of New York	500
AUGUST 16. By "Canto," Mexico.	
Continental Rubber Co. of New York	1,607
AUGUST 20. By "Monterey," Mexico.	
Continental Rubber Co. of New York	1,120

Imports of Crude Rubber Into the United States by Customs Districts

	* June, 1926		Six Months Ended * June, 1926	
	Pounds	Value	Pounds	Value
Massachusetts	2,959,517	$1,541,416	19,791,680	$13,895,167
Buffalo	.....	.....	41,199	21,730
New York	50,615,523	31,806,456	427,057,184	296,949,565
Philadelphia	.....	.....	8,856	3,225
Maryland	483,266	248,351	3,215,454	2,100,961
New Orleans	.....	.....	3,230	1,318
Los Angeles	1,389,351	735,949	9,894,010	6,995,980
San Francisco	216,400	107,977	864,055	572,676
Oregon	11,200	6,389	134,780	104,303
Washington	44,800	16,576	1,008,000	662,200
Minnesota	56,000	35,294	123,200	71,251
Michigan	.....	.....	30,082	15,544
Ohio	.....	.....	67,225	42,948
Colorado	240	153	595,060	560,414
Totals	55,776,297	$34,498,561	462,834,015	$321,997,282

* Including Latex Dry Rubber Content.

BELGIAN RUBBER IMPORTS FROM KONGO

June arrivals at Antwerp, Belgium, of crude rubber from the Kongo amounted to 190 tons as compared with 193 tons in May. Stocks on hand June 30 totaled 93 tons, against 128 tons at the close of May.

British Malaya

Rubber Exports

An official cablegram from Singapore to the Malay States Information Agency, 88 Cannon street, London, E. C. 4, England, states that the amount of rubber exported from British Malaya in the month of July last totaled 28,824 tons. The amount of rubber imported was 15,280 tons of which 12,787 tons were declared as wet rubber. The following are comparative statistics:

	1925		1926	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	19,183	10,132	30,452	10,237
February	21,622	10,071	30,440	8,306
March	26,836	13,399	35,012	14,800
April	22,414	11,750	23,727	10,565
May	26,667	12,979	31,231	10,604
June	27,894	14,706	30,624	11,764
July	24,809	16,192	28,824	15,280
Totals	169,425	89,229	210,310	81,556

Distribution

The following is a comparative return of distribution of shipments during the months of June and July, 1926.

	June, 1926 Tons	July, 1926 Tons
United Kingdom	6,835	6,775
United States	18,976	17,962
Continent of Europe	2,822	2,495
British possessions	535	553
Japan	1,436	1,032
Other foreign countries	20	7
Totals	30,624	28,824

Exports of Rubber, Caucho and Balata from Amazonas During First Six Months of 1926

	EUROPE						AMERICA						
EXPORTERS	Fine Kilos	Medium Kilos	Coarse Kilos	Caucho Kilos	Balata Kilos	Total Kilos	Fine Kilos	Medium Kilos	Coarse Kilos	Caucho Kilos	Balata Kilos	Total Kilos	Grand Total Kilos
General Rubber Co. of Brazil—Pará-Manáos	382,482	58,098	23,480	216,867	46,354	727,281	948,922	122,443	342,197	476,491	26,892	1,916,945	2,644,226
Berringer & Co.—Pará-Manáos	717,178	62,874	18,378	214,095	84,986	1,097,511	328,471	46,382	269,615	684,986	62,228	1,391,682	2,489,193
J. G. Araujo & Co., Ltd.—Manáos	291,461	41,434	19,017	48,394	80,427	480,733	661,911	31,443	146,827	388,059	5,270	1,233,510	1,714,243
Ranniger & Co.—Pará	427,737	38,872	17,755	71,650	.....	556,014	129,321	15,098	75,034	106,283	.....	325,736	881,750
Lyra & Co.—Manáos	253,511	44,367	79,082	77,360	9,883	464,203	201,616	6,396	64,383	88,242	.....	360,637	824,840
Suarez Filho & Co.—Pará	233,248	1,247	480	.....	.....	234,975	239,069	.....	29,225	180,720	.....	449,014	683,989
F. Chamié—Pará	3,080	.....	.....	.....	.....	3,080	358,125	6,908	177,523	8,302	.....	550,858	553,938
Suter Baumann & Co.—Pará-Manáos	127,618	9,100	1,770	46,479	103,808	288,775	11,750	.....	53,985	27,330	530	93,595	382,370
S. Bitar, Irmãos—Para	97,397	2,898	29,887	52,015	.....	182,197	84,498	7,300	41,751	46,804	.....	180,353	362,550
Companhia Fluvial—Manáos	120,774	6,930	4,563	113,549	.....	245,816	60,493	7,206	12,918	28,007	.....	108,624	354,440
Adelbert H. Alden, Ltd.—Pará-Manáos	199,716	6,568	31,651	8,459	.....	246,394	.....	.....	.....	.....	.....	.....	246,394
Jos. Origet & Co.—Pará	74,511	1,840	2,138	66,072	.....	144,561	.....	.....	.....	.....	.....	.....	144,561
Ferreira Costa & Co.—Pará	10,160	.....	.....	5,040	.....	15,200	19,320	1,500	15,240	65,560	.....	101,620	116,820
Amazon River St. Nav. Co. Ltd.—Pará	41,209	3,436	5,409	31,665	.....	81,719	.....	.....	.....	.....	.....	.....	81,719
B. Levy & Co.—Manáos	31,680	.....	.....	.....	.....	31,680	29,600	1,280	1,660	320	.....	32,860	64,540
Higson, Jones & Co.—Manáos	21,630	366	195	4,373	2,990	29,554	.....	.....	2,040	.....	12,690	14,730	44,284
Semper & Co.—Manáos	19,550	165	300	.....	.....	20,015	129	.....	2,040	.....	.....	2,169	22,184
Holden & Co.—Pará	.....	.....	.....	.....	.....	.....	16,320	.....	.....	.....	.....	16,320	16,320
Various—Pará	5,770	1,020	1,156	150	.....	8,096	15,600	.....	6,000	.....	.....	21,600	29,696
Total from Pará and Manáos	3,058,712	279,215	235,261	956,168	328,448	4,857,804	3,105,145	245,956	1,240,438	2,101,104	107,610	6,800,253	11,658,057
From Iquitos	2,354	8,767	428	6,653	840,642	858,844	31,380	83,547	15,712	13,164	25,750	169,553	1,028,397
Grand total from Amazonas	3,061,066	287,982	235,689	962,821	1,169,090	5,716,648	3,136,525	329,503	1,256,150	2,114,268	133,360	6,969,806	12,686,454

Destinations

	From Pará Kilos	From Manáos Kilos	From Iquitos Kilos	Total Kilos		From Pará Kilos	From Manáos Kilos	From Iquitos Kilos	Total Kilos
New York	1,970,275	4,675,542	169,553	6,815,370	Antwerp	.....	13,580	10,588	24,168
Liverpool	556,520	1,686,230	15,641	2,258,391	Rotterdam	5,250	8,650	.....	13,900
Hamburg	503,685	989,782	44,615	1,538,082	Amsterdam	.....	7,310	.....	7,310
Havre	443,725	411,912	321,755	1,177,392	Naples	.....	.....	3,096	3,096
London	.....	97,332	463,149	560,481	Havre via Hamburg	1,820	.....	.....	1,820
Brazil (South)	141,546	12,890	.....	154,436	Hamburg via Liverpool	1,454	.....	.....	1,454
Genova	104,034	.....	.....	104,034					
Liverpool or Hamburg	26,520	.....	.....	26,520	Totals	3,754,829	7,903,228	1,028,397	12,686,454

Compiled by Berringer & Co., Pará, Brazil.

INDIA RUBBER WORLD
FOUNDED 1889
CAOUTCHOUC
GUTTA-PERCHA
Reg. U.S. Pat. Off.
Reg. United Kingdom.

Vol. 74 September 1, 1926 No. 6

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DIPHENYLGUANIDINE

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HOSE FOR EVERY PURPOSE - - - - - - BELTING OF ALL KINDS
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NEW YORK
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ULTRA ACCELERATOR

The chief advantages to be gained from the use of MONEX are:—

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2. Low accelerator cost.
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Accelerating Strength Data

Rubber	100
Zinc Oxide	5
Sulphur	3
Monex	0.1

Cure in strip mold	60′ /5 lbs.	30′ /10 lbs.	45′ /10 lbs.	60′ /10 lbs.
Tensile strength	3955	3510	4235	4305
Elongation	770	820	810	830

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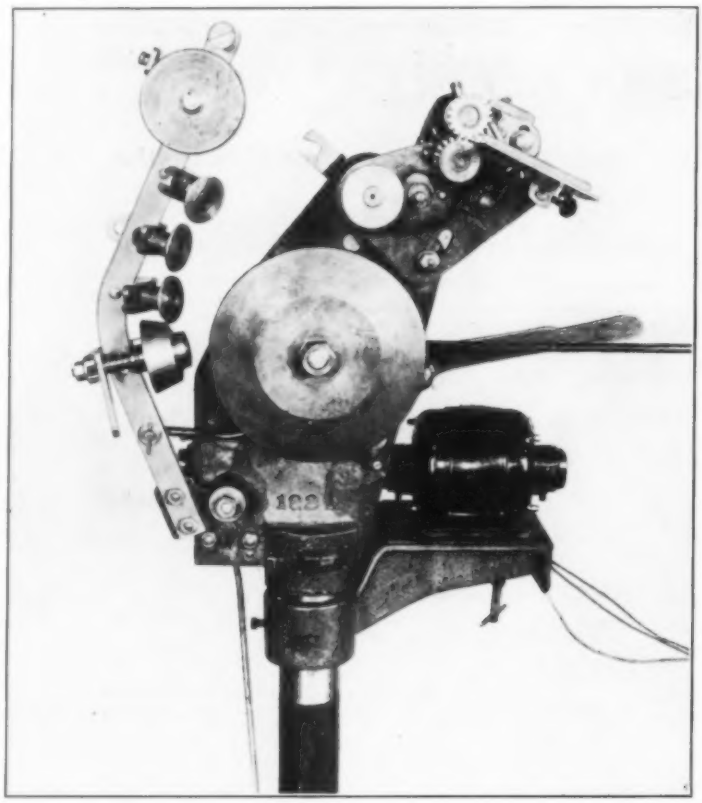

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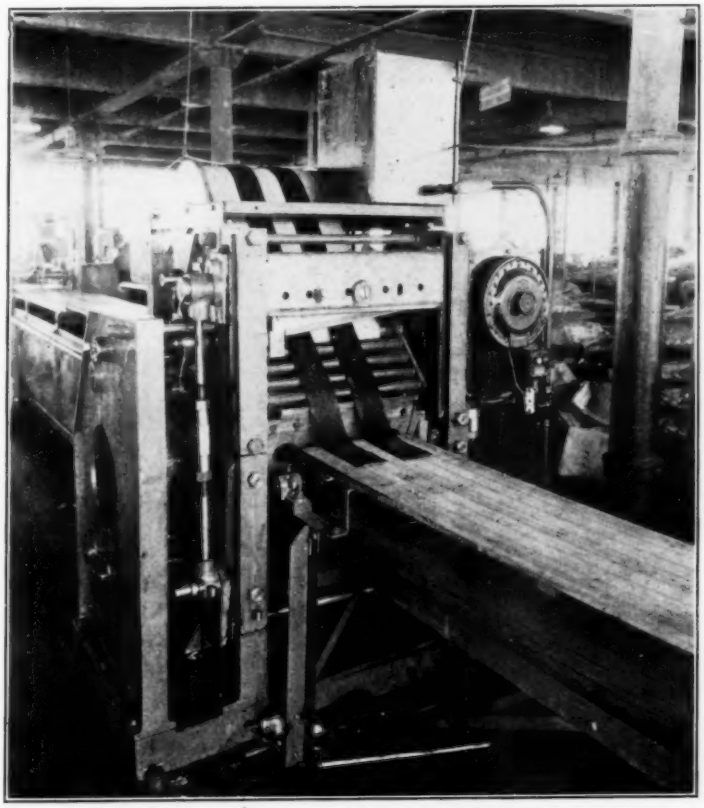
Utility Tread Cutter



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These machines will cut your raw treads as they leave the calender to exact length, and on the 45 degree skive cut. Saves remeasuring, weighing, and recutting.

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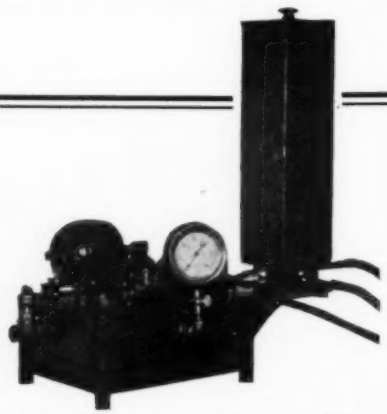

Inside Soapstoning Device

Prevents blowing of soapstone about the work-room.

Unexcelled for 50' and 500' lengths of hose tubes, any diameter.

Automatically soapstones inside of tube as it is run from tubing machine—just a puff of soapstone at given intervals—feed can be regulated for more or less soapstone.

Cannot Stretch the Tube as Air Pressure Is Not Continuous

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Exclusive Selling Agents for

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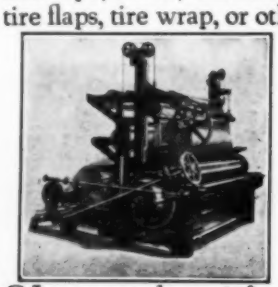

CAMACHINE 10 MODEL 20

This is a heavy duty Cameron Machine for universal service in all the branches of the rubber industry. It is built in sizes to handle webs up to 82 inches wide, winding rolls to a maximum diameter of 36 inches. A liner apparatus for insertion and removal of liner fabric is included.

¶ Let us send you information on the proper machine for *your* needs—mail the coupon!

To Cameron Machine Company, w
61 Poplar Street, Brooklyn, New York.

¶ *Send us further information on machines for producing* .....

Firm Name .....

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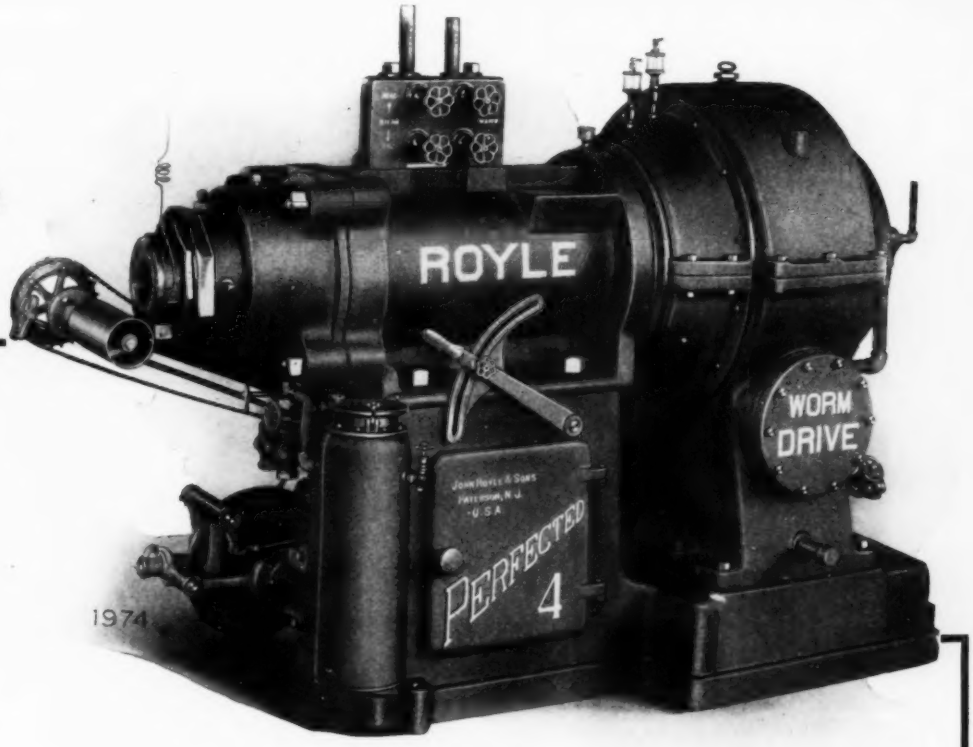

No. 4 Perfected Tuber, Motor Driven

Arranged for Inner Tube work, with heated die, variable speed take-off, and soapstone features.

Typical uses:

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- Rubber heel stock
- Jar ring stock
- Solid tires
- Fire hose linings
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Features and optional equipment:

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- Ball or marine thrust
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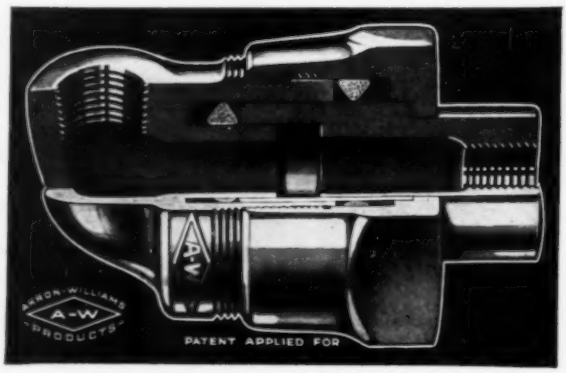

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It is rapidly replacing other swing joints on heater presses subjected to frequent changes of temperature and pressure.

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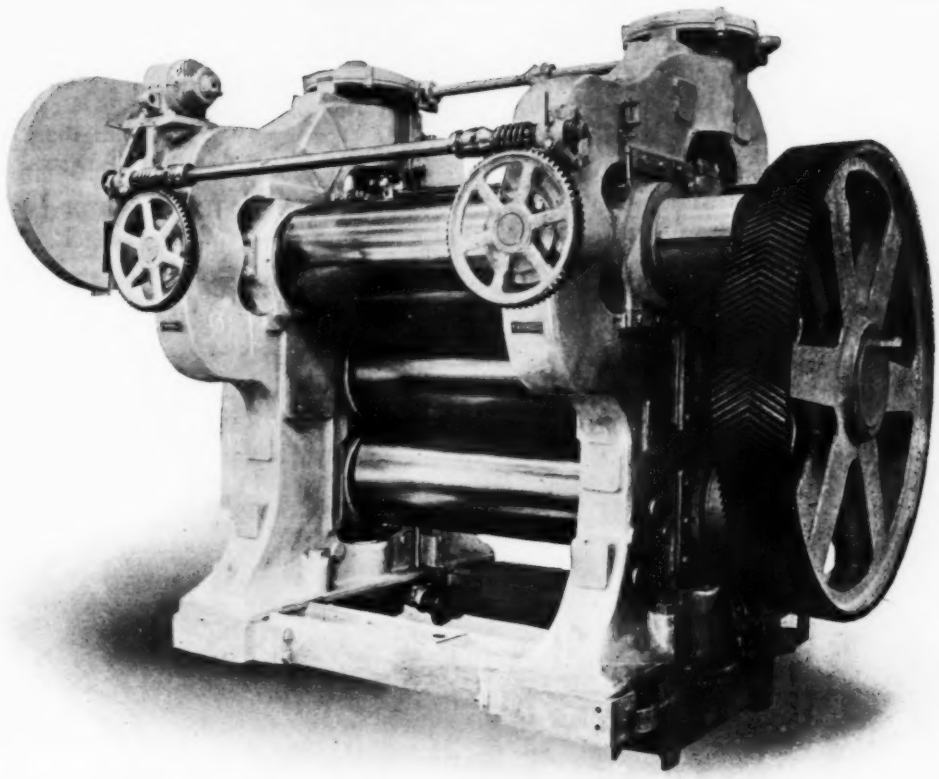

28″ x 80″ FARREL FOUR ROLL CALENDER
SIDE ROLL TYPE
(Drive and Drive Gear guard omitted)

FARREL-SYKES cut herringbone gears throughout. Motor adjustment for top, bottom and side rolls. Built in various sizes and also of Vertical type.

PARTICULARLY SUITABLE FOR DOUBLE COATING.

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HEAVY DUTY STRAINING MACHINES

BUILT IN 4½"—6"—8"—10" AND 12" SIZES

Size Denotes Worm Diameter in Inches

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Worm Drive Type

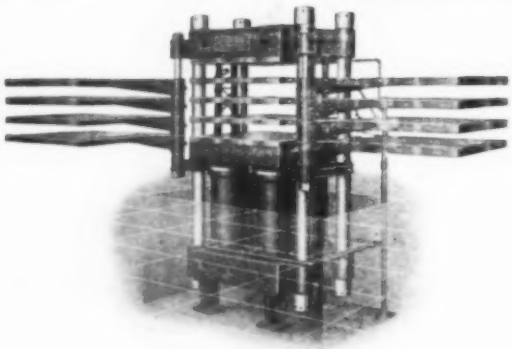
Represented in the "AKRON" District by the

Akron Rubber Mold & Machine Co.

Manufactured by

ALLEN MACHINE CO. - - - ERIE, PENNA.

French Hydraulic Machinery



48" x 48"—450 tons Molding Press

Advanced design and economical construction are features of our hydraulic equipment. It will be to your advantage to let our engineers figure for you.

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"Tubing Specialists" Means This—

We are supplying most of the big users of such material in sizes from ¼" to 1½" on regular run and with larger sizes on order.

The reasons for this leadership are:

1. *Our compounds give unusual service*
2. *Our large production facilities insure low prices*
3. *We make quick and dependable deliveries.*

Send us samples or specifications of what you need. That's all we require to show you how reasonably we can take care of your work.

The Eclat Rubber Company

52 E. Wetmore Street Cuyahoga Falls, Ohio

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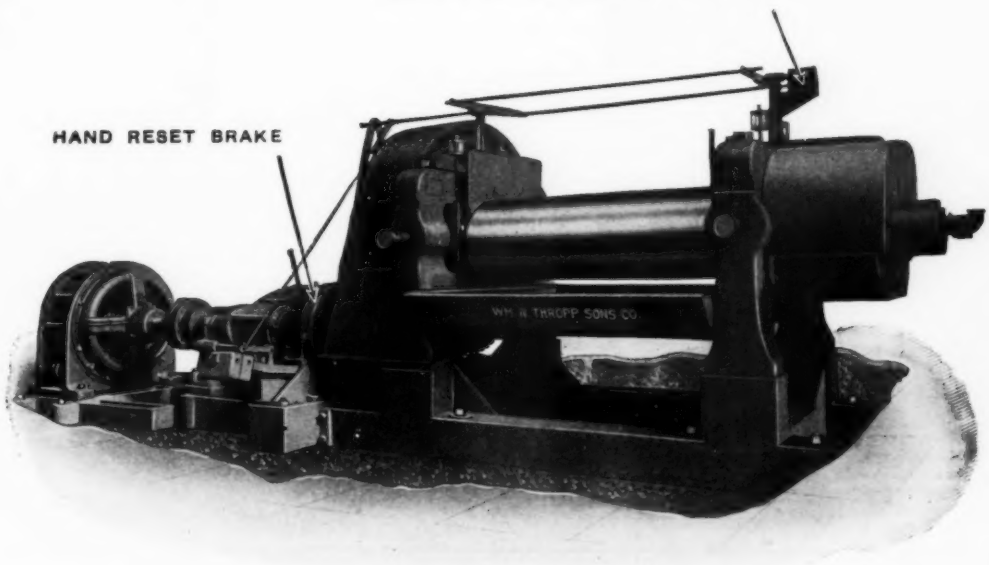
SWITCH IN SERIES WITH
LOW VOLTAGE RELEASE ON MOTOR

HAND RESET BRAKE

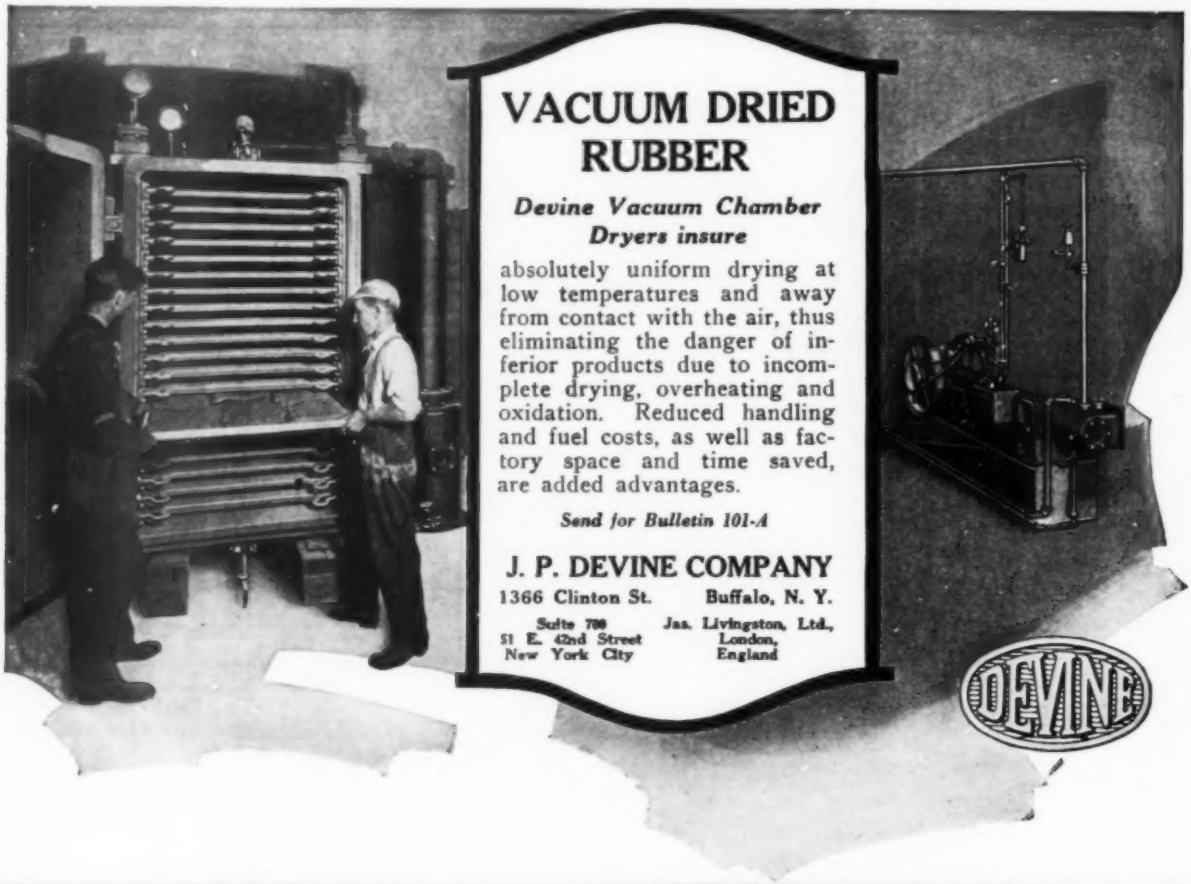


20" and 22" x 60" INDIVIDUAL MOTOR DRIVEN GRINDER OR MIXER

Driven by a 100 horse-power Motor, 720 r.p.m., with a flexible coupling between the motor and drive. Gear drive is the herringbone type; pinion is forged steel and cut on shaft, reduction gear is of open hearth steel, cut. Top cap frames with steel gibs. All iron automatic adjustable guides; oil cups at the top of frames with pipes passing through same to lubricate the bearings. Equipped with all our "Safety First" equipment. Pan under the small connecting gears, and steel guard over same, with end shield and thimbles over stuffing boxes to contain oil and for protecting gears for safety. Master Gear enclosed in wire mesh guard.

One of the most important features of the machine is our safety stop for stopping the rolls in case of accident to the operator. The machine is equipped with overhead levers, and bars that can be operated in either direction—"up or down," from either side by some portion of the operator's body if both hands are caught between the rolls; this operates a small switch that is in series with low voltage release on motor, cutting the current off motor and at the same time operating a hand re-set brake that stops the momentum of the machine—(patent applied for). The bedplate of the machine contains the machine, drive and motor,—one unit, and on the same foundation line, making it easy to set up, and a more substantial and solid machine.

WILLIAM R. THROPP SONS' CO. Trenton, N.J., U.S.A.


VACUUM DRIED RUBBER
Devine Vacuum Chamber Dryers insure
absolutely uniform drying at low temperatures and away from contact with the air, thus eliminating the danger of inferior products due to incomplete drying, overheating and oxidation. Reduced handling and fuel costs, as well as factory space and time saved, are added advantages.
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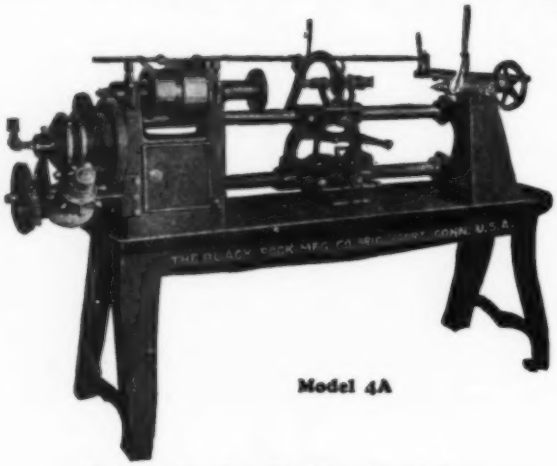
Jas. Livingston, Ltd., London, England
DEVINE

The Recognized Standard Automatic Washer Cutting Machine

Speed
Accuracy
Economy



Model 4A

Send us samples of tubing and let us cut them into washers. You will be surprised when you get our figures.

Rubber Cutting Machine Specialists

BLACK ROCK MANUFACTURING CO.

175 OSBORNE STREET BRIDGEPORT, CONN.

Reclaimed Rubber

For All Purposes

QUALITY

VALUE

SERVICE

RUBBER REGENERATING COMPANY

Largest Reclaimers in the World

(FOUR FACTORIES)

Naugatuck, Conn.

MISHAWAKA, IND. MONTREAL, CAN. MANCHESTER, ENG.

2000 Ton Hubbing Press

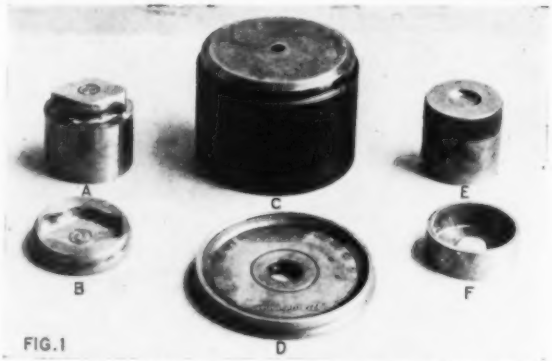


FIG. 1

Samples of Hubbing done on a Burroughs Rodless Hubbing Press

BURROUGHS RODLESS
DIE HUBBING AND DIE SINKING PRESSES

200 to 5,000-Ton Capacity

COMPACT, RIGID, MINIMUM DEFLECTION

Complete with Depth Indicator, Hydraulic Gauge, Forged Steel Valve, Raising Table and Hardened Steel Anvils in top and bottom platens.

Forty years' experience as commercial die hubbers has taught us the requisites of a first class hubbing unit.

Of primary importance to purchasers of our equipment the results of this experience and our knowledge of hubbing are made available to them.

We shall be pleased to have your inquiries for press and proper type of pump for use therewith.

THE BURROUGHS CO.

246 NORTH TENTH ST Established 1869 NEWARK, N. J.

Established 1873

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BUY AND SELL RUBBER SCRAP
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UNIFORMITY
QUALITY
PURITY
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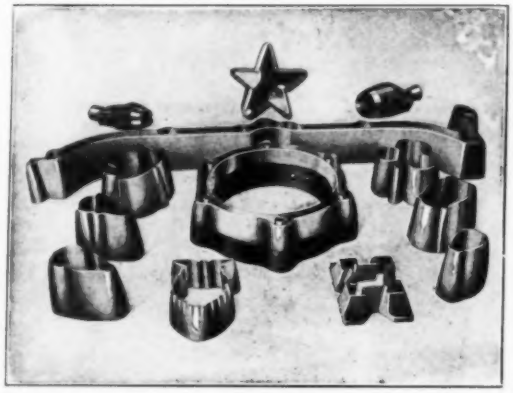

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We Carry in Stock in Liverpool

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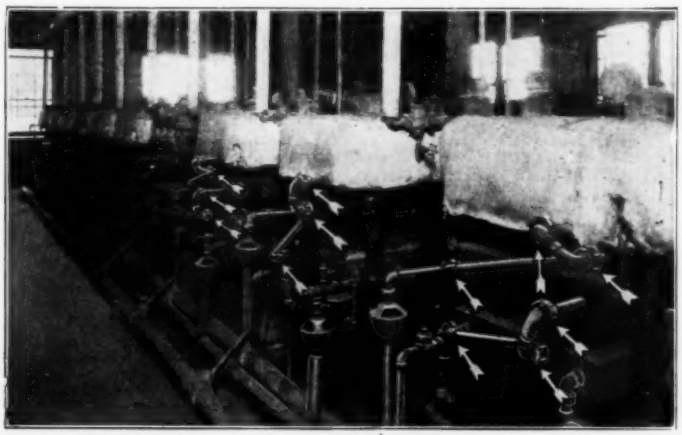
AND MAKERS OF

MURRAY CORD TIRES

LEAK PROOF SWING JOINTS ARE ECONOMICAL



RUBBER manufacturers have found that FLEXO JOINTS pay for themselves in a short time. The absence of leaks in vulcanizing press steam lines saves many B.t.u. and in turn conserves fuel and fuel cost.

But FLEXO JOINTS are not limited to vulcanizing presses. They can be used wherever a swinging connection is needed for steam, air, gas, water or oil. Made of high quality brass, without springs or ground surfaces.

FLEXO JOINTS will pay for themselves in *your* plant.

Order from your regular supply house or direct from us.

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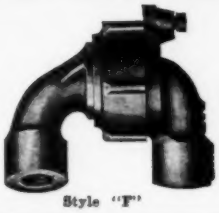

Style "F"

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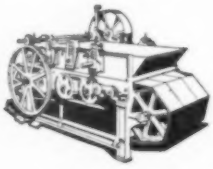
LOUISVILLE

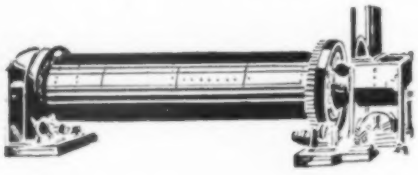
CONTINUOUS PRESS



When pressing devulcanized shoddy, it makes a tremendous difference whether the material goes to the dryer at 30% moisture or 40%—the difference being between economy and extravagance. The Firestone Tire & Rubber Co., are pressing tire stock down as low as 26% with the Louisville Press. It might pay you to investigate.

LOUISVILLE

ROTARY DRYERS



It also makes a difference in operating costs whether it takes half a pound of steam more or less to dry a pound of reclaim. The Louisville Rotary Dryer is most sparing in its use of steam because its design, based on long experience is *right*. There is a size for every capacity—ask us for quotations.

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DRYING MACHINERY
COMPANY,
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THAT HAS STOOD THE TEST FOR YEARS

Special GRADES for the following TRADES

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Gums, Asphalts, Pitches, Waxes, Earths, Clays, Fillers, Dry Colors, Chloride of Sulphur, Rubber Substitutes, Lime Products for absorbing moisture, Bisulphide of Carbon, Mineral Rubber or Hydro Carbon, Cantella Gum, a rubber gum, etc.

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GOLDEN AND CRIMSON ANTIMONY

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Messrs. Harriss, Irby & Vose, of New York, are our clearing brokers.

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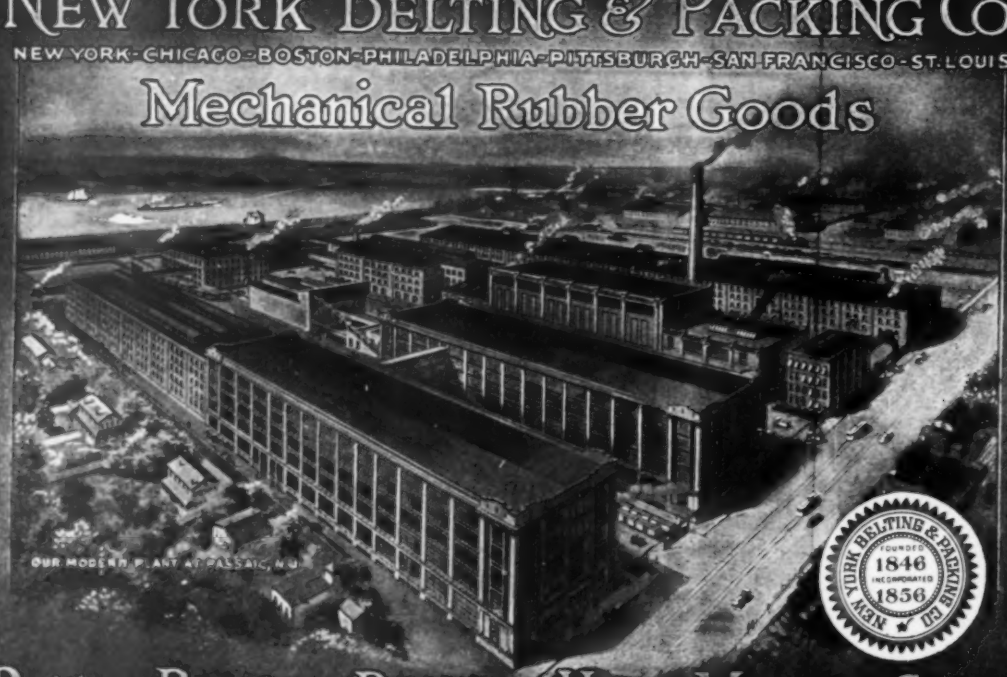
Mechanical Rubber Goods



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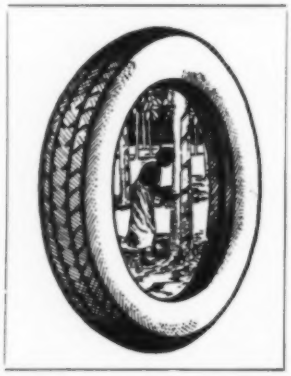

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WE CAN SATISFY YOU ON THE DIFFICULT GOODS

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GIVE US A TRIAL WE CAN PROVE IT

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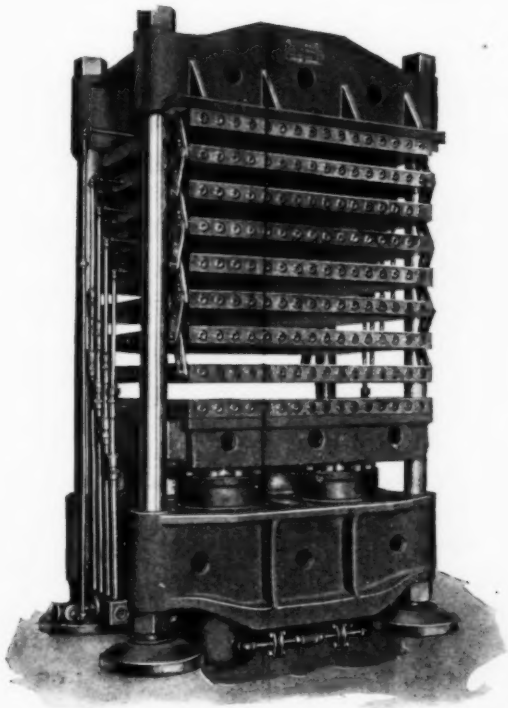
BUILDERS of QUALITY MACHINERY for 90 YEARS—

SOUTHWARK Standard and Special Hydraulic Presses for Rubber Manufacture—



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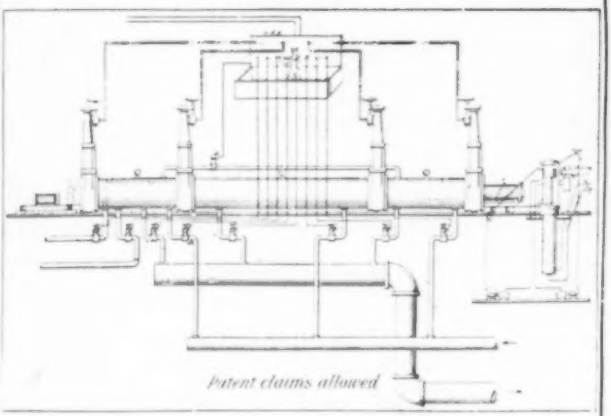

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Every 15 minutes 100 or 200 tires emerge from this heater, *cured.*

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With Dykes continuous curing heaters no change need be made in your present curing process.

The patent is for sale and the adoption of this method will show large savings and increased production.

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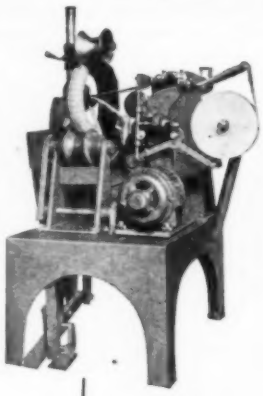

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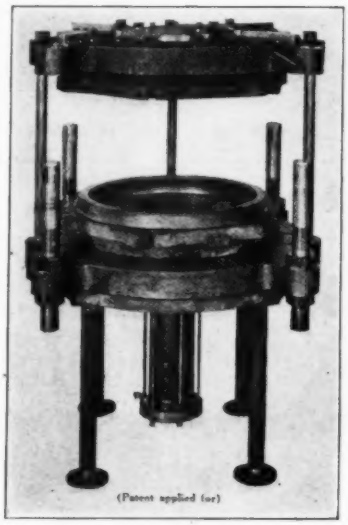
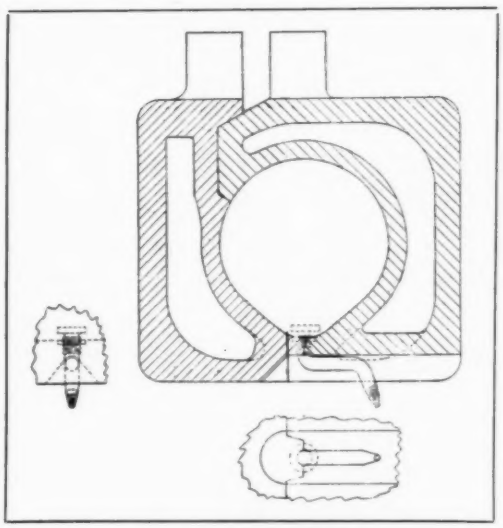


Instant Locking Tube Press Vulcanizer

This press is capable of producing 45 to 100 good tubes each 24 hours. The press closes and securely locks the mold in seven seconds.



Patented Feb. 2, 1926
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Truck, Bus, Balloon Tubes Easily Molded

By

New M. A. Flynn Method

Tubes cured in the Flynn Mold are full size and tire shape. They fit snugly against tread and rim without overstretched rubber at any point. There is no doubt as to the position of the tube in the casing before or after inflation.

No rind at all on the tread which is of full thickness.

Established tube production methods need not be changed up to the curing operation.

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Let us tell you how to overcome failure of tube wall, splice troubles and valve pad troubles.

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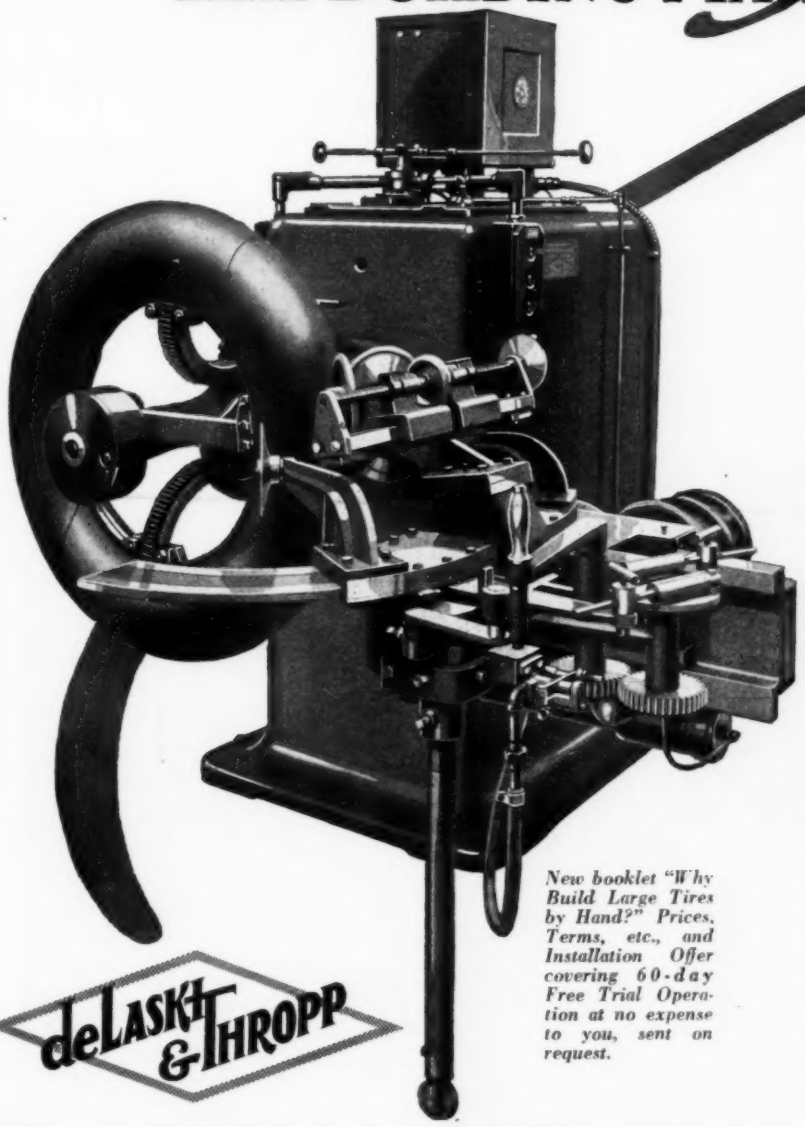
The de LASKI & THROPP Giant TIRE BUILDING MACHINE



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ON YOUR
18" and 19"
DIAMETER TIRES

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De Laval Worm Reduction Gear
A Superior Speed Reducer
Enables inexpensive high speed motors to drive low and moderate speed machinery
This 4⅓ ratio gear transmits 5 HP. from an 1800 R.P.M. motor to a Sirocco fan.
Ask for Catalog R
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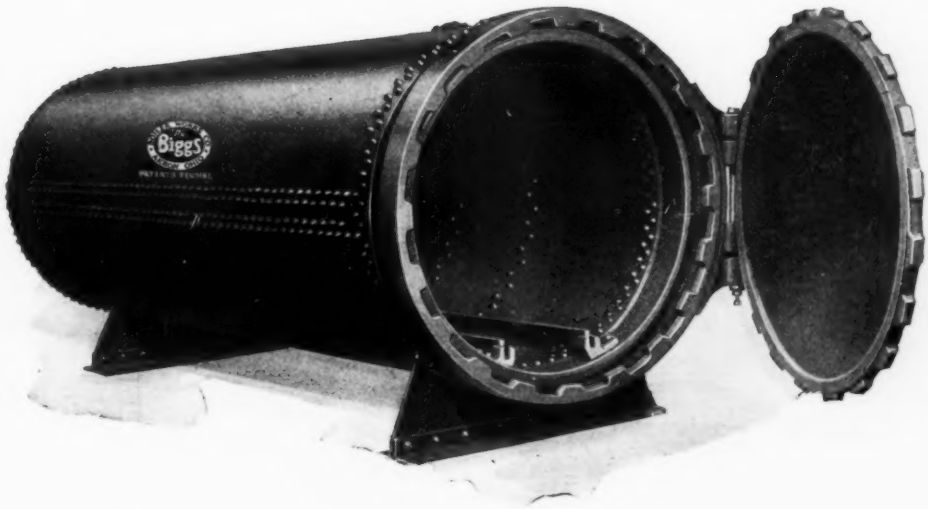

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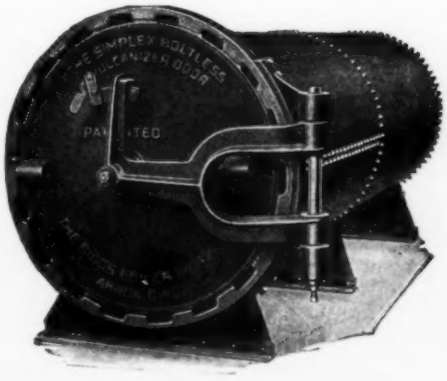

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Successful experience too—abreast with the developments in vulcanizing rubber.

The new water cure vulcanizer shown above is one of Biggs most noteworthy contributions to the manufacturers of rubber products.

Biggs equipment is proving our claims for quality every day. We want you to see them in operation and judge from the reports of those operating them.

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For Rubber Makers

Carbon Tetrachloride 99.7%
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Sulphur Chloride, Various Grades
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For the Rubber Industry

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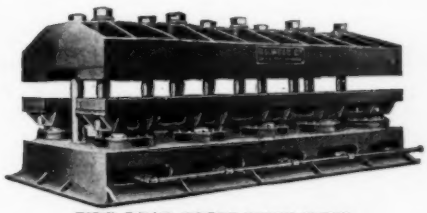
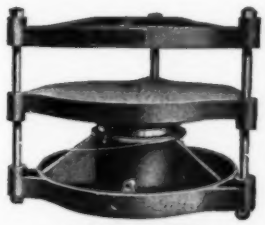
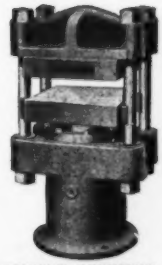


TIRE BEAD PRESS TWIN TYPE

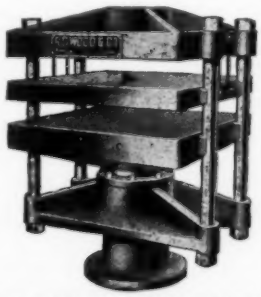


CLOSING PRESS



SINGLE OPENING STEAM-PLATEN PRESS

DIE CHILLING PRESS

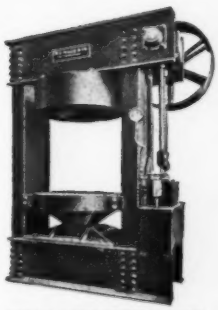


TWO OPENING STEAM-PLATEN PRESS

We build a complete line of up-to-date hydraulic equipment for the manufacture of rubber tires and mechanical rubber goods.

Our experience, extending over a long period of years together with our excellent shop facilities also enable us to design and build hydraulic machinery for any special requirement.

Catalogue mailed upon request.



TIRE FORCING PRESS

HYDRAULIC MACHINERY & OPERATING VALVES

R. D. WOOD & CO.

ESTABLISHED 1803

PHILADELPHIA, PA.

CAST IRON PIPE, HYDRANTS AND VALVES

½" three-way YARWAY HYDRAULIC VALVES for 2500 lbs. pressure on phonograph record presses built by Charles Burroughs Co.

The higher the pressure, the tighter the valve

YARWAY HYDRAULIC VALVES are pressure-packed—increasing the pressure merely makes them hold tighter. This is accomplished by the special construction and packing features, which eliminate all stuffing boxes and cup leathers.

Wear is taken care of automatically. Every time valve is operated, sealing bushings are ground to surface of plug.

YARWAY
HYDRAULIC VALVE
(CASKEY PATENTS)

The YARWAY HYDRAULIC VALVE can be operated within a comparatively small radius, assuring quick and positive action and helping the operator to concentrate on his work.

Made for pressures up to 5000 lbs. per square inch, in two-, three-, and four-way types. Details and prices in Bulletin H-2—we're saving a copy for you.

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7602-20 Queen St.
PHILADELPHIA
Representatives in Principal Cities

THE HARSHAW FULLER & GOODWIN CO.
545 HANNA BLDG.—CLEVELAND, OHIO

CHEMICALS - COLORS - PIGMENTS
FOR
RUBBER MANUFACTURERS

Antimony Sulphuret	Lead Oleate
Chromium Oxide	Red Lead
Glycerine	Litharge

PARA CLAY—Dry Ground
WHITE FLOSS CLAY—Water Ground
DIAMOND MICA—Water Ground
HEXAMETHYLENETETRAMINE

WAREHOUSES
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MECHANICAL FABRIC CO.
PROVIDENCE, R. I.
Manufacturers of
India Rubber Thread
for Weaving and other uses
Card Cloths
of Woolen, Cotton and Rubber
Rubber Coated Cloths
Vulcanized or Unvulcanized for various purposes
CORRESPONDENCE SOLICITED

ESTABLISHED 1853
EASTHAMPTON RUBBER THREAD CO.
EASTHAMPTON, MASS.
Original Makers of RUBBER THREAD in America
Also Makers of RUBBER BANDS
Both THREAD and BANDS are made only of the best UPRIVER FINE PARA RUBBER

A COMPLETE modern plant equipped to furnish Basic and Special Rubber Manufacturing and Reclaiming Machinery of practical design and superior quality from the drawing board to the finished machines. Everything is done within our plant under one supervision. In addition to a complete line of Rubber Machinery, we also make all kinds of heavy Gears, spur, herringbone, etc. as well as chilled iron and steel Rolls, turned, ground, polished and crowned or corrugated for Washers, Mixers, Mills, Refiners, Crackers, Calenders, etc. etc. Whatever your requirements, we solict your inquiries.

The Adamson Machine Company

Engineers, Machinists, Iron and Steel Founders

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WASHED and DRIED RUBBERS

Selected Acre Bolivian Fine
Para Washed and Air-Dried
in the U. S. A.

Para Grades Washed and Air-Dried in Brazil

Beni Bolivian Fine
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Upriver Coarse
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Peruvian and Brazilian
Block Balata
Crude Washed and Dried

Address—Washed Rubber Department

H. A. ASTLETT & CO.

64 Water Street

New York, N. Y.

Genasco
Reg. U. S. Pat. Off.

MINERAL RUBBER

recommends itself because

—it is a hard, natural hydrocarbon.

—produced under the strict supervision of an experienced and up-to-date laboratory.

—proved unequalled by aging tests.

—of uniformly high quality.

—it will not readily oxidize as do cheaper grades of mineral rubber.

Shipped to all parts of the world in metal drums.

Stocks carried at Maurer, N. J., Madison, Ill., and by A. S. Carlton, 27 Haymarket Square, Boston, Mass.

THE BARBER ASPHALT COMPANY

New York PHILADELPHIA Chicago
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Miners of Gilsonite, Trinidad and Bermudez Lake Asphalts, and Asphaltic Products.

Cable Address—BASPACO, Philadelphia

THE WELLMAN COMPANY

are manufacturers of

THE WELLMAN SOLE CUTTING MACHINE

AND

THE PATTEN SOLE CUTTING MACHINE

for cutting soles, taps and other irregular shapes at any bevel from 27° to 90° from sheet stock. They are also in a position to work out many of your engineering problems, to design and build any tool or light machine needed in your factory.

Send blue prints of requirements to

WELLMAN COMPANY

Engineers and Machinists
MEDFORD, MASS.

You Can Make This Test Yourself

Compare a Circular-Mandrel-Cured Tube with an ordinary tube. Feel the difference of their inner surfaces.

Circular Cured Ring shaped tubes fit snugly into the Casing without Creasing or Wrinkling because they are built, not forced into the shape in which they serve.

Showing the Rippled, creased Surface of an ordinary Straight-Mandrel-Cured Tube. Each Ripple is a Point of Possible Weakness for the reason that the Rubber has Buckled, in being Forced to take the Ring Shape.

If you inflate an ordinary tube and a Circular-Mandrel-Cured Tube alongside of each other you will find a great number of ripples on the inner surface of the average tube, just as shown in the picture above. Those ripples and wrinkles are the result of forcing the straight-mandrel-cured tube to become round. Each one of these ripples represents a point of possible weakness. Then look at the smooth surface all around, of the ring-shaped Circular-Mandrel-Cured Tube.

Every ripple or crease that is apparent on the ordinary straight-mandrel-cured tube, shows how much slack there is in its inner length. The outer surface has been stretched nearly the same distance as the inner surface has been squeezed together, because they were both the same length to start with. This presents another danger.

Everyone knows that stretched rubber will cut and tear a great deal easier than rubber in a natural, unstretched state. The rubber in curved-mandrel-cured tubes is in an unstretched condition. That is why Curved-Mandrel-Cured Tubes give more than is expected of them.

No Crooked Valve Stems on Circular Cured Tubes

Every tube manufacturer knows of the endless troubles that can develop at the valve. Circular-Cured tubes are troubleless tubes because the valve stems are set at the proper angle in the making. In straight-mandrel-cured tubes (as shown in the picture of the tube) the valve stem is invariably at an unnatural angle, and has to be pulled over in being fitted to the casing. In addition to the constant strain through this forcing there is also a big chance of a crooked valve stem inviting pinching.

Circular-Mandrel-Cured Tubes offer none of these disadvantages because the valve stem is in the same position when it leaves the factory as it is when it is in service on a car. That's why you can trust a Circular-Mandrel-Cured Tube to the last mile.

Let us quote you on *Circular Mandrels.*

THE CLYDE E. LOWE CO.

2976 East 81st Street **Cleveland, Ohio**

STOP

Buying So Many Molds and Curing Rings

Greater Production speed, greater safety, and a reduced labor turnover are proven results from this Vulcanizer. Only 1½ minutes are required for a complete change from cured to uncured tire, including the rimming-up. Different sizes or brands can be cured in the same vulcanizer. Light, fast men can be used.

That big item of curing room expense—the replacement of broken bead and mold rings—is Wiped Out in shops where our Automatic Self-Rimming Vulcanizer is used because the curing rings are bolted right into the mold halves.

And gone, too, is the costly replacement of broken molds. Two Big Savings which every manufacturer appreciates.

Exit the Rimming Press

Still another source of time and money saving is the Automatic Self-Rimming feature. You can forget the rimming-up operation for this Vulcanizer handles the job perfectly.

For any size tires including 40x8 and for tubes up to 10 inches this vulcanizing method is proving the greatest cost cutter ever offered. Let our representatives show you facts and figures.

The Akron Standard Mold Co.

Akron "The Established Measure of Value" Ohio

More than—
$1,500,000

INVESTED IN BANBURY MIXER INSTALLATIONS BY THE RUBBER INDUSTRY DURING THE LAST FISCAL YEAR ENDING JUNE 30, 1926

In the twelve months from July 1, 1925, to June 30, 1926, which measure our last fiscal year, the rubber trade took delivery of $1,100,000 worth of Banbury Mixers and their Gear Reductions. Including motors, conveyors, foundations and installation the total investment in these mixing units in this single year amounts to over $1,500,000.

This endorsement of the Banbury Mixer is convincing proof of its value to the rubber industry. The savings in power, labor, floor space and the more efficient handling of materials are tremendous—enough to return the total original investment within a year. After that—a million and a half dollars added to profits every year. Are you getting a share of it?

In addition to the large savings, the Banbury produces absolutely uniform stocks of better quality than can be obtained by the old methods and it fulfills every requirement for safety and healthful operating conditions for the workmen.

The present Banbury Mixer is a sturdy, dependable machine, mechanically reliable in every way and it is available in a range of sizes suitable for any production or purpose.

Let our engineers analyze your conditions and recommend the installation best suited to your requirements.

BIRMINGHAM IRON FOUNDRY

ENGINEERS FOUNDERS MACHINISTS

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Representatives:

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THE MANHATTAN RUBBER MFG. CO.

SOLE MAKERS Condor BELT

Factories, Warehouses and Executive Offices:
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SOLE MAKERS Condor BELT

Manufacturers of

MECHANICAL RUBBER GOODS
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CLEVELAND, OHIO, Suite 309, Rockefeller Bldg.
DETROIT, 1650 Penobscot Building.
JOPLIN, MO.
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SOLE MOLDS **A. C. HAYDEN CO.** HEEL MOLDS

QUALITY * *20 Years Designing and Originating* *

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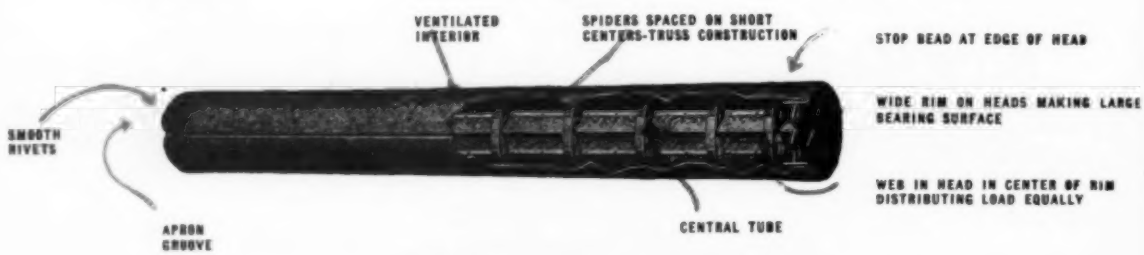
BROCKTON, MASS., U. S. A.

"Universal Steel Calender Stock Shells"

TRIED TESTED PROVEN


VENTILATED INTERIOR
SPIDERS SPACED ON SHORT CENTERS-TRUSS CONSTRUCTION
STOP BEAD AT EDGE OF HEAD
WIDE RIM ON HEADS MAKING LARGE BEARING SURFACE
WEB IN HEAD IN CENTER OF RIM DISTRIBUTING LOAD EQUALLY
SMOOTH RIVETS
APRON GROOVE
CENTRAL TUBE

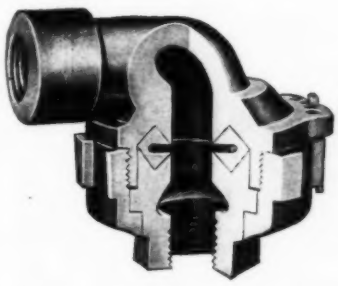
PIONEER SINCE 1905

THE W. F. GAMMETER COMPANY, Cadiz, Ohio

Fisk Rubber Company Endorses

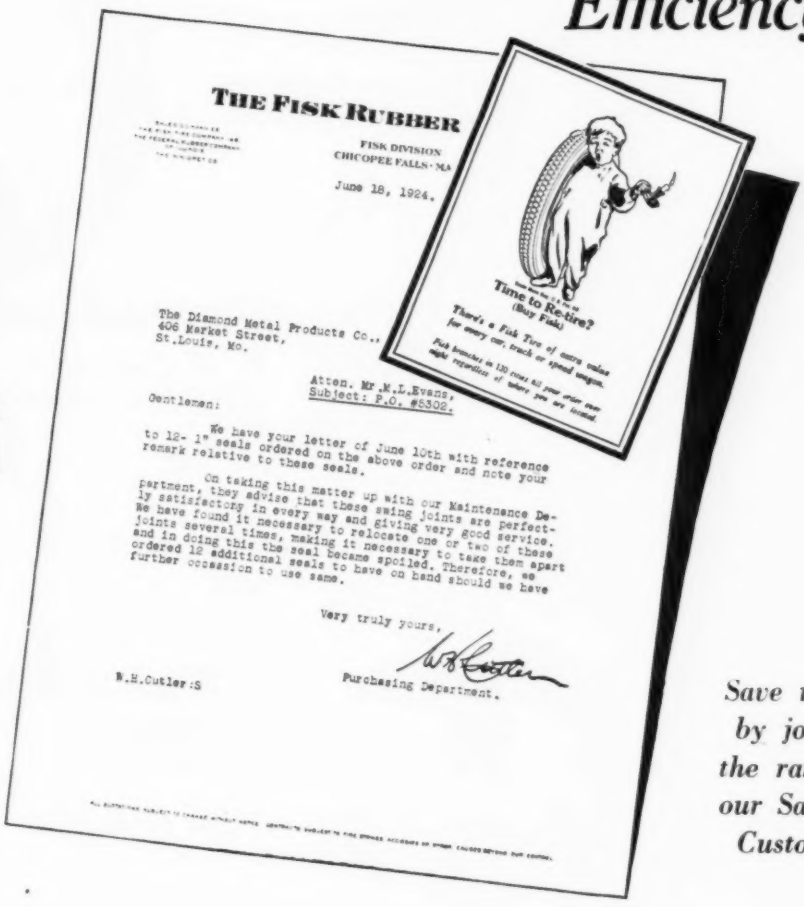
Diamond Swing Joint

Efficiency—



Simple as A-B-C
3 parts and a seal

Always work
and never leak


THE FISK RUBBER
FISK DIVISION
CHICOPEE FALLS · MA
June 18, 1924.
The Diamond Metal Products Co.,
406 Market Street,
St.Louis, Mo.
Atten. Mr.M.L.Evans,
Subject: P.O. #6308.
Gentlemen:
We have your letter of June 10th with reference to 12- 1" seals ordered on the above order and note your remark relative to these seals.
On taking this matter up with our Maintenance Department, they advise that these swing joints are perfectly satisfactory in every way and giving very good service. We have found it necessary to relocate one or two of these joints several times, making it necessary to take them apart and in doing this the seal became spoiled. Therefore, we ordered 12 additional seals to have on hand should we have further occassion to use same.
Very truly yours,
W.H.Cutler:S
Purchasing Department.
Time to Re-tire?
(Buy Fisk)

Save money by joining the ranks of our Satisfied Customers

Test them today without expense. Wire for them when you need them. Sizes 3/8"—1/2"—3/4"—1"—1 1/4"—1 1/2" shipped from stock.

DIAMOND METAL PRODUCTS COMPANY

406 MARKET STREET ST. LOUIS, MO.

Parker, Peebles & Knox, Inc., Sole Export Agents, 44 Whitehall Street, New York City

Cable Address "Noxco"

TRADE MARK REGISTERED

The RED OXIDE we offer is of superior quality especially made for rubber compounds.

It is the result of more than fifty years experience of producing this type of pigment.

Our line includes numerous shades of Bright Red and Maroon absolutely uniform in color and quality, to fit your requirements.

Test Samples Sent Upon Request

Genuine English Vermillion
Fine Bone Blacks
Yellow Oxide

For your convenience stocks are carried in the principal cities in the U. S. A.

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It Costs No More To Buy the Best

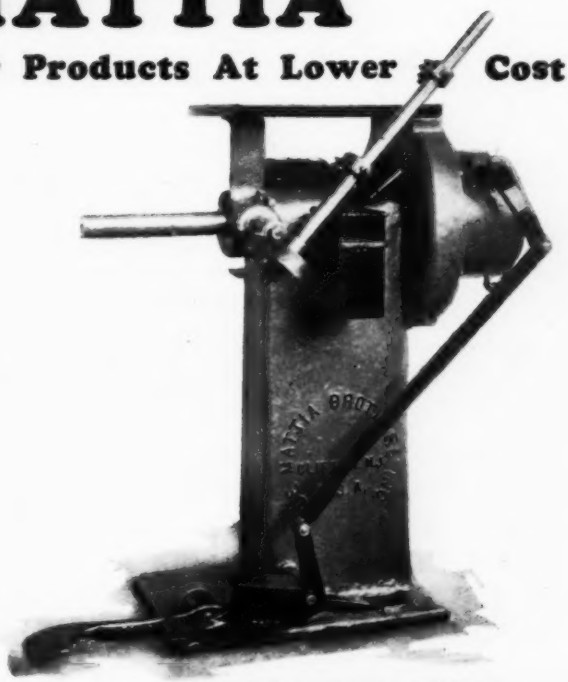
DE MATTIA

Proven Devices For Better Products At Lower Cost

THE TRI-CORE WITH SEMI-AUTOMATIC CHUCK

Combines the advantages of all other known methods of tire building and produces better tires at lower cost.

Compare Your Costs and Tire Sections with Tires Built by This Method.



POWER BUILDING STAND

For faster production on any method of tire building—Foot control of spindle speed with quick acting brake—Forward or reverse speed. Self-oiling, multiple disc clutch, complete with motor and oil switch.

SPRING BALANCE CONTROL FOR HORIZONTAL MOLDS

Makes possible the operation of the top half as quickly and with as much ease as handling a five pound weight.

SIMPLEX
(Model 18)

For 18″ and 19″ rim dia. Cores

BOOK TYPE VULCANIZING MOLDS
With hand or power operated Quick Lock Ring

MOLDS **AUTOMATIC CHUCKS** **CORES**

Stock Delivery from Akron

DE MATTIA BROTHERS, INC.

Specialists in Tire Building Equipment

GARFIELD **NEW JERSEY**

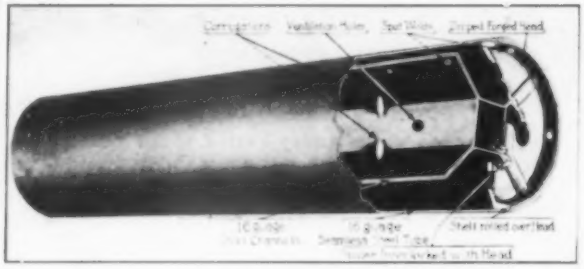
All Mandrels Highly Polished, Sherardized and Chromilited—Plugs Supplied and Inserted

MANDRELS

for

JAR RINGS—CAR COUPLINGS
STEAM AND GARDEN HOSE

Reinforced ends inserted in Inner Tube Mandrels are Economical and Durable



Patented No. 1,545,661
Licensed under Gammeter U. S. Patent No. 1,003,593

CALENDER STOCK SHELLS

3-S

Strength-Stability-Superior

Every Shell Guaranteed Indefinitely Against Breakage

ASK FOR DETAILS

Manufacturers of Air Bag Cleaning Machines, Circular Mandrel Cleaning Machines, and Special Equipment Exclusively for the Rubber Trade.

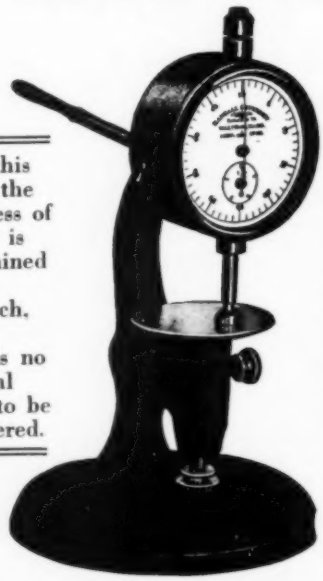
We Issue a Monthly Stock List. If We Have Overlooked You, Write Us.

The New Haven Sherardizing Co.
868 Windsor Street, Hartford, Conn.
Branch Plant—Akron, Ohio

We are Distributors of the
CLYDE E. LOWE SEAMLESS COLD BENT CIRCULAR MANDRELS

The Efficiency Rubber Gauge

(The Randall and Stickney Thickness Gauge)



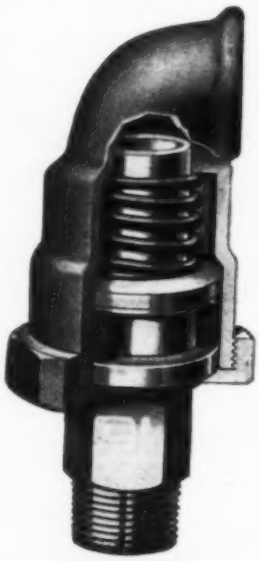
With this Gauge the thickness of rubber is determined within .001 inch. and there is no personal factor to be considered.

This instrument has been in use by the leading Rubber Manufacturers of this country and Canada for fifteen years.

Operated by a Standard Pressure on a Standard Area

Send for Descriptive Circular and Prices

FRANK E. RANDALL, Waltham, Mass.



LOOMIS SWING JOINT

The Original Joint That Solved the Flexible Connection Problem.

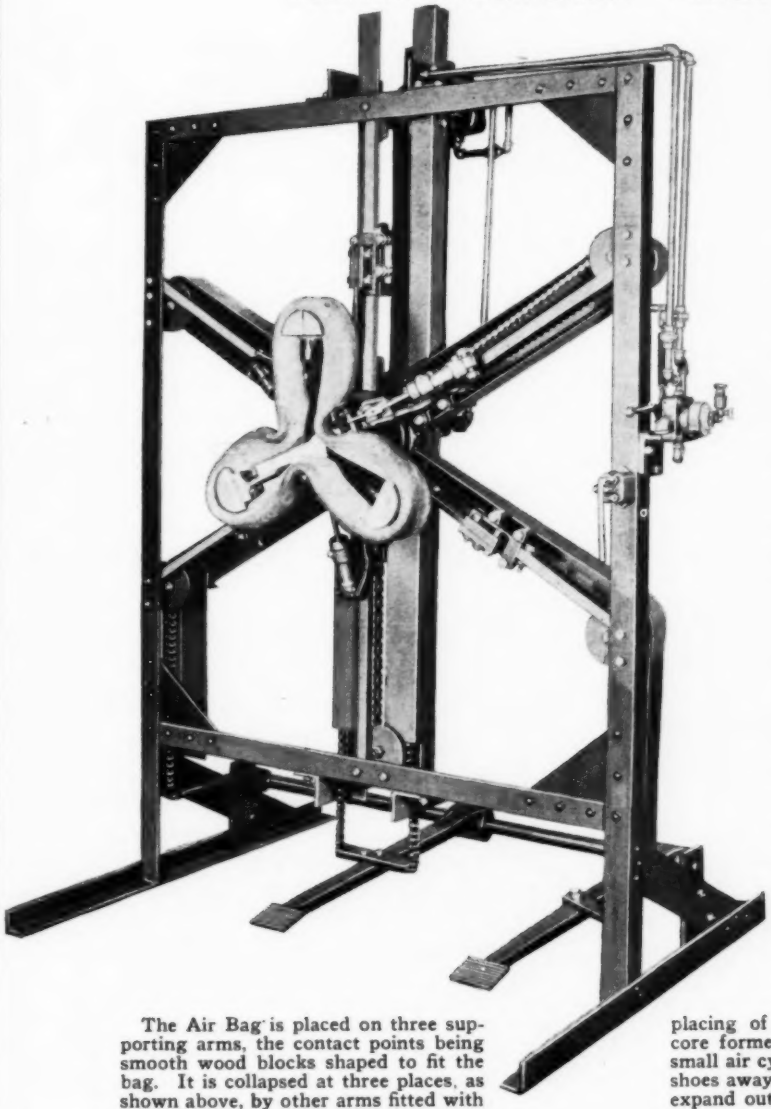
Thousands in Use by Satisfied Customers

PATENTED

E. G. LOOMIS CO.
39 Cortlandt Street, New York
FACTORY: NEWARK, N. J.
A Reliable Joint

Air Bag Inserting Machine

Saves Minutes — Saves Bags



Inserting Air Bags in tire casings need no longer be a difficult, tiresome job. And the cost of replacing bags damaged by twisting and kinking can now be saved.

See at the left the new Akron Standard Vertical Type Bagger. It inserts the Air Bags in the regular core formed casings with marvelous speed. And also it will expand and form flat drum tires and insert the air bag at one operation.

This new Bagger operates very easily, requiring only 100 pounds of air pressure. With the smaller size core formed tires one man can handle everything and bag several times as many tires as two men can by hand. With the flat drum tires two men can work together like clock work and expand and insert bags in 100 to 130 tires per hour.

Beneath the picture here is a condensed description of the combined expanding and bagging operation.

Save Air Bags, Save Minutes, Save Costs with this great Bagger. It is already giving satisfactory service in tire making plants. We will be glad to furnish you with full details. Just write or wire.

The Air Bag is placed on three supporting arms, the contact points being smooth wood blocks shaped to fit the bag. It is collapsed at three places, as shown above, by other arms fitted with quarter circle metal hinged shoes each operated by a small air cylinder. The collapsed diameter may be made as small as necessary to permit the quick placing of the flat band tire (or the core formed casing) in position. The small air cylinders then pull the hinged shoes away from the bag, allowing it to expand outward against the tire. The three supporting arms then expand radially, inserting the bags in the tire and at the same time expanding the tire.

The Akron Standard Mold Co.

Akron "The Established Measure of Value" Ohio

THE WESTMORELAND CHEMICAL AND COLOR COMPANY

PHILADELPHIA, S. E. Cor. 22nd and Westmoreland Streets — NEW YORK, 150 Nassau Street

VICTORIA VENETIAN RED

RED OXIDES OF IRON
OXIDE OF CHROMIUM

Strictly Pure and Impalpably Fine

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"DURO" BRAND

GUAYULE RUBBER

Washed and dry, ready for compounding. Invaluable in conjunction with Plantation Rubbers and Reclaims as an aid in Compounding. Especially useful in all Friction Stocks.

Continental Rubber Company of New York

120 Broadway :: :: :: :: :: :: NEW YORK

FISK

Time to Re-tire Get a FISK

Trade-Mark Reg. U. S. Pat. Off.

TWENTY-SEVEN years of tire building experience and a world-wide organization to select the finest materials has much to do with the very excellent service Fisk Balloon Tires are giving motorists everywhere.

NEARPARA RUBBER CO.

TRENTON, NEW JERSEY

Reclaimed Rubber Manufacturers

BRANDS	FOR USE IN
"HUDSON"	Hard Rubber Goods, Etc.
"POTOMAC"	Insulated Wire, Etc.
"POTOMAC A"	Hospital Sheeting, Soles, Heels, Etc.
"MERRIMAC"	Molded Goods and Insulated Wire, Etc.
"DELAWARE"	Druggist Sundries, Etc.
"ST. LAWRENCE"	Ins. Wire, Auto Tire Friction, Etc.

All "NEARPARA" Stocks uniform and contain a high percentage of rubber

PLYMOUTH RUBBER CO.

INCORPORATED

CANTON :-: MASS.

Largest Rubberizers of Cloth in the World

RUBBER HEELS
HOSPITAL SHEETINGS
ELECTRICAL TAPES

SHEET RUBBER GOODS
AUTO TOP MATERIALS
GEM DUCK

PLYMOUTH QUALITY RAINCOAT FABRICS

RECLAIMED

RUBBER

Announcing to the Trade the Development of Our New

TIRE STOCK

COMET

ADAPTABLE FOR ALL FORMULAE

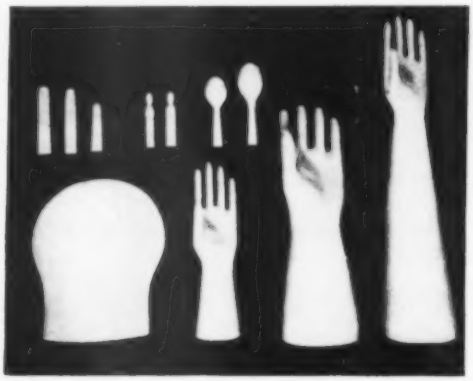
AND THE BEST STOCK ON THE MARKET FOR THE PRICE

SAMPLES ON APPLICATION
DELIVERIES IN ANY QUANTITY

PEQUANOC RUBBER CO.

OFFICE AND WORKS

BUTLER, NEW JERSEY



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VITRIFIED PORCELAIN FORMS
FOR DIPPED RUBBER

The Only Manufacturers of One Piece
Up-To-Date Closed End Forms

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Established 1894 AKRON, OHIO

VACUUM CUP BALLOON TIRES
TUXEDO VACUUM CUP TIRES
VACUUM CUP TIRES

PENNSYLVANIA RUBBER CO. OF AMERICA, INC.,
General Offices, Jeannette, Pennsylvania

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Hydraulic Compressed Brake Lining
Ford Transmission Linings
Radiator Hose
Universal Joint Discs
Clutch Rings and Facings
Conveyor and Transmission Belting
Dredging Sleeves
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FACTORIES AND MAIN OFFICES
TRENTON, NEW JERSEY, U. S. A.

PERFECT BEADS

Entire freedom from bead trouble in the construction of straightside tires is assured by the use of either National (Patented) High Tensile Strength, Flat Woven, Bead Braid or our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Our engineering department tests beads and furnishes complete confidential reports as to their stretch, set and bursting point, without charge. Inquiries solicited regarding this special service.

Write for working samples of either National flat braid or Pratt Cables (no charge to tire manufacturers) and full information as to our products and service.

National-Standard Company
NILES, MICHIGAN, U. S. A.

"DEPENDABLE"

MEADE RUBBER COMPANY
STOUGHTON, MASS.

Rubberized Fabrics of All Kinds.

Gem Duck — Rubber Heels

Sole Manufacturer of the Patented

"GOSMER-ETT"
Reg. U. S. Pat. Off. January 6, 1914
TRADE MARK

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PARA HARD CURE RUBBER

WASHED AND DRIED IN BRAZIL

If you are looking for Quality and Uniformity

ASK FOR

CROWN BRAND RUBBER CREPE

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COVER YOUR REQUIREMENTS NOW

GET THE RIGHT RUBBER FOR YOUR PRODUCT

It "crowns" the best Crepe in the Market

Packing Standardized Crown Brand Rubber Crepe

Strong Cedar Cases—Free From Splinters

J. G. ARAUJO & CO., LTD. **MANAOS, BRASIL**

OUR ORGANIZATION IS EQUIPPED TO TAKE CARE OF YOUR REQUIREMENTS IN

BOTH

CRUDE and SCRAP

RUBBER

H. MUEHLSTEIN & CO., INC.

CHICAGO
114 W. Van Buren St.

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1111 Akron Savings & Loan Bldg.

BOSTON
176 Federal Street

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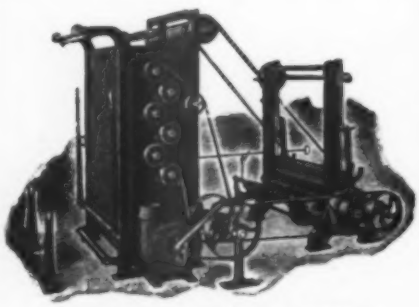
726 So. Hill Street

NEW YORK
Liggett Bldg., 42nd St. and Madison Ave.

WAREHOUSES: JERSEY CITY, N. J., and AKRON, OHIO

CABLE ADDRESS "STEINMUL" N. Y.—CODES USED—LIEBER'S STANDARD & FIVE LETTER—A. B. C. 5TH EDITION—BENTLEY'S—SIMPLEX CODE CONDENSOR



HEATH PATENT VERTICAL BRUSHES
With Calender Rolling Machine

CURTIS & MARBLE MACHINE CO.
WORCESTER, MASSACHUSETTS

Brushing Machines, for cleaning goods to be coated; for brushing coated goods in connection with starch; or for cleaning cotton liners of soapstone, talc, etc.; Starching Attachments; Mill Sewing Machines, for stitching the ends of pieces together; Measuring Rolls and Dials; Rolling Machines; Inspecting Machines; Guide Frames; Machine Brushes of all kinds, etc.

The building of textile machinery for handling all varieties of cotton and other fabrics is our specialty.

We are Offering

LITHARGE AND RED LEAD

MANUFACTURED BY

METALS REFINING CO., HAMMOND, IND.

Write for samples and price

WISHNICK-TUMPEER CHEMICAL COMPANY

CHICAGO
365 E. Illinois Street

CLEVELAND
Davenport and E. 14th St.

BROOKLYN, N. Y.
130 44th Street

HORSE HEAD
XX
ZINC OXIDE

On the basis of 8000 tests in a standard rubber compound average shipments of XX Zinc Oxide have shown a gain of approximately 112 foot pounds per cubic inch in "Proof Resilience" during the past three years—the result of a constant effort to produce a Zinc Oxide specially adapted to the requirements of the rubber industry.

New Jersey Zinc

The New Jersey Zinc Company

Established 1848

Products Distributed by

The New Jersey Zinc Sales Company

160 Front Street, New York City

CHICAGO · PITTSBURGH · CLEVELAND · SAN FRANCISCO

R. T. VANDERBILT CO.

INCORPORATED

50 East 42nd Street, New York

WE have the pleasure to announce the completion of arrangements with

The Goodyear Tire & Rubber Company

whereby we now have the exclusive sale of their celebrated, though never before advertised, accelerator

CAPTAX

(Mercaptobenzothiazole)

Informative literature on Captax is now being distributed.

WAREHOUSES:

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Union Terminal Warehouse
East South & Brooks Sts.

BOSTON
Francis Fitz Company
30 Pittsburgh St.

CHICAGO
Midland Warehouse & Transfer Co.
43rd & Robey Sts.

SAN FRANCISCO
Haslett Warehouse Co.
60 California St.

TORONTO
Toronto Storage Co.
17 River St.

TRENTON
Anchor Warehouse Co.
N. Y. & Olden Ave.

CHARLES T. WILSON CO., Inc.

82 Beaver Street **New York City**

AKRON OFFICE: 507 Second National Bldg.

Telephone Main 3799

DIRECT IMPORTERS OF

CRUDE RUBBER

WE ALSO HANDLE THE

ONLY RUBBER GROWN

IN THE

UNITED STATES

GUAYULE RUBBER PRODUCED AT MARATHON, TEXAS

WRITE FOR PRICES AND DELIVERIES

Manufacturers' inquiry solicited and will receive prompt attention

Rubber

Complete facilities for opening dollar and sterling letters of credit to finance import shipments of rubber.

INTERNATIONAL ACCEPTANCE BANK, INC.

52 Cedar Street, New York

PAUL M. WARBURG, *Chairman* — F. ABBOT GOODHUE, *President*

The Atlas Chemical Co.

WALTHAM, MASS.

MANUFACTURERS OF

ATLAS SULPHURET OF ANTIMONY FOR THE RUBBER TRADE

SINCE 1880

OHMLAC KAPAK

(Refined Elaterite)

For The Rubber Trade

The finest quality of Hydrocarbon Compounds made. Write us today about your requirements.

Ohmlac Paint & Refining Co.

Refinery and Manufacturing Plant: Clearing, Ill.

General Offices—Marquette Building, Chicago

EDWARD E. ALLEN & SON

ERIE, PENN.

RUBBER MACHINERY

Specializing in

TUBERS
STRAINERS
INSULATORS

SPECIFICATIONS AND PRICES ON REQUEST

Akron Office

c/o Williams Foundry & Machine Co.

ARCHER RUBBER CO.

Manufacturers

Royal Archer Lines

Piano and Organ Cloths
Rubber Tubings
Hospital Sheetings and Blankets
Nursery Sheetings and Crib Blankets
Rubber Surface Clothing
Aprons, Ponchos, Rubber Fabrics
Rubberizing for the Trade

Factory and Main Office, MILFORD, MASS.

New York Office—200 Fifth Avenue, New York City

MOLDED RUBBERS FOR THE FURNITURE TRADE

Band Saw Bands
Sanding Machine Rubbers
Rubber Mallets

All these,—and in addition a very complete line of molded mechanical rubber specialties.

ELKHART RUBBER WORKS

ELKHART INDIANA

Our Newest Development

FLEXITE

More Than a Reclaimed

FLEXITE is not just another Reclaimed Rubber offered under a trade name or number. It has the properties of an uncured crude rubber compound, will stand all the heat required on calender and mill, and will not scorch in tuber.

This stock cannot be duplicated with crude rubber above 18 cents.

Write us for Samples.

U.S. RUBBER RECLAIMING CO. Inc.

100 East 42 St. N.Y. — Factory-Buffalo, N.Y.

43 years Serving the Industry — Solely as Rubber Reclaimers

Akron Representative: F. F. Dugan, 617 Second Nat'l. Bank Bldg.

The TAINTOR Brands of

WHITING

Made from IMPORTED CHALK

and

PARIS WHITE

Made from GENUINE ENGLISH CLIFFSTONE

EVERY POUND WATER FLOATED

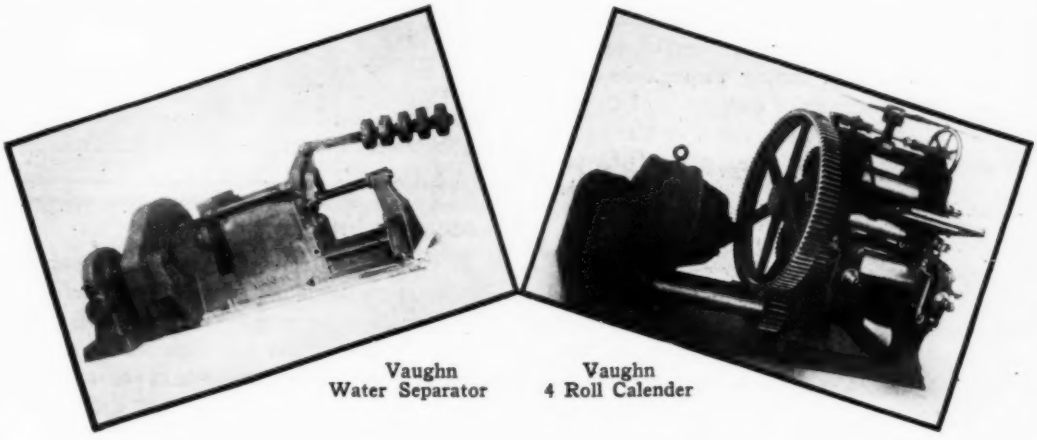
Uniformity of color and fineness insured by a water grinding and floating process

MANUFACTURED IN THE U. S. A. BY THIS COMPANY FOR OVER 35 YEARS

THE TAINTOR COMPANY

Office: 2 Rector Street New York, N. Y.

Your Silent Partner



Vaughn Water Separator

Vaughn 4 Roll Calender

VAUGHN
RUBBER MILL MACHINERY

THE Water Separator (or Screw Press) is a Vaughn specialty that has met with unusual success in the rubber reclaiming industry. This machine removes a large percentage of water from the reclaimed stock after devulcanization, and is a most compact, efficient and economical unit.

The Calender shown is a 12″x24″ four Roll Calender that can be used either for treads or two ply operation. These small Calenders can be furnished in a variety of roll diameters and lengths and with the fourth roll at the top if desired.

VAUGHN EQUIPMENT
FOR THE RUBBER MILLS
Includes:

Calenders
Refiners
Mills
Washers
Crackers
Gear Units
Water Separators

THE VAUGHN MACHINERY COMPANY
CUYAHOGA FALLS OHIO

Our Publicity Page

THE INDIA RUBBER WORLD has, for nearly two-score years, recorded the technical and commercial development of the rubber industry from crude rubber to finished product. This service has established the paper firmly in the esteem of practical rubber men embraced in the world-wide circulation of the paper. Its service to the industry commercially has been largely through its departmentalized news, reviews and price quotations of the materials used in the rubber industry. Some of these purely commercial records date from the foundation of the paper.

Crude Rubber Markets

The New York crude rubber markets, both outside and on the Rubber Exchange, are regularly the subjects of comprehensive reviews. That of the outside market is headed by a ratio graph exhibiting the average closing prices for the past and current year and the daily closing prices of the month under review up to the 24th or 28th day. Daily closing prices are also tabulated and continued each month, making available a complete record for several years. Conditions of the New York outside market prevailing from week to week are reported in detail with reference to the reacting influences of foreign and domestic conditions. The reader is thus afforded a correct and comprehensive view of the trend of the spot price of the standard grades of rubber.

With the inauguration of the New York Rubber Exchange a tabulation of the daily closing prices of futures has been made a regular feature of the record of that market. This is followed by high and low monthly futures for a full year charted to show their values at the same dated weekly intervals for 12 monthly positions. This chart was specially designed for *The India Rubber World*, to give an analytic consolidation of the trend and range of prices of a month's transaction on the Rubber Exchange. It gives 96 or 120 price positions according as 4 or 5 weeks are recorded.

These data are followed by a review of business on the Rubber Exchange in scope and treatment similar to that on the outside market and record is made of the bearing of stocks, restriction and demand on supply and prices.

Rubber Scrap and Reclaimed Rubber

Supplementary to the review of the crude rubber markets are independent reports on the mutually related markets for rubber scrap and reclaimed rubber. These reports are of interest to scrap dealers, reclaimers and rubber goods manufacturers because the prices are derived from reliable trade sources and refer to specific grades. Typical standard reclaims are quoted and their specific gravities are given, thus enable buyers to compare their actual economy on the basis of volume cost.

Compounding Ingredients

In the market for chemicals and compounding ingredients important market news is noted in a brief review and every new ingredient is promptly listed under its appropriate classification. The prices are dependable and are confirmed monthly by reliable commercial sources. The classified prices also serve as a convenient check list for chemists, compounders and purchasing agents.

Cotton and Fabric Market

In the rubber industry the course of cotton and fabric prices is second in importance only to that of crude rubber. In the review of this market the developments and outlook of the cotton and fabric trade are given comprehensively and summarize the trade changes from month to month. As in the case of crude rubber, the course of spot middling upland cotton is shown progressively by a ratio graph covering two years by months and one month by days.

Valuable Service to Advertisers

The India Rubber World, by its comprehensive market reviews above described is rendering valuable service to the strictly commercial interests of the rubber trade. The completeness and acknowledged success of this service is evidence of the availability of the paper as an advertising medium for dealers in supplies for the rubber industry.

Baird Rubber & Trading Co.

233 BROADWAY, NEW YORK

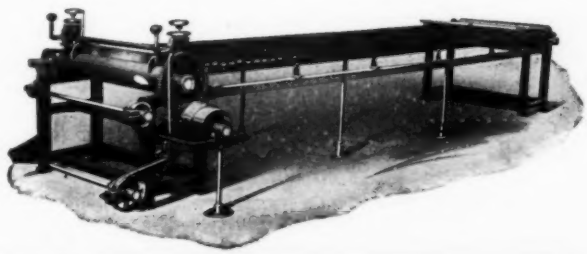
Telephone, Whitehall 6890 Cable Address: CHAUNBAIR, NEW YORK

CRUDE RUBBER

***and* GUAYULE**

THE EXTREMELY HEAVY CONSTRUCTION OF THESE

RUBBER SPREADING MACHINES



makes them particularly well adapted for applying thin successive coatings of rubber for the manufacture of high grade sheetings, rain coatings, offset blankets, etc.

MACHINES MADE IN WIDTHS FROM 50-in. to 80-in.

NEW ENGLAND BUTT CO.
304 Pearl St. PROVIDENCE, R. I.

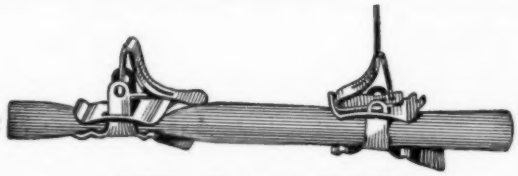
GUAYULE

LEON BRAND, Washed and Dried

A Superior Friction and Aid to Compounding

THE CIA. EXPLOTADORA COAHUILENSE, S. A.

BAIRD RUBBER & TRADING CO., Agents
Importers of Crude Rubber
233 BROADWAY Phone: Whitehall 6890-1-2-3 NEW YORK CITY



ICE BAG CAPS
SYRINGE SHUT OFFS
BATH SPRAY HEADS

Sheet Metal Specialties and Fittings for Rubber Goods of Every Description.

BRASS GOODS MANUFACTURING CO.
341 Eldert St. Brooklyn, N. Y.

Manufacturers of the

"HOUSATONIC"

Insulating, Tubing and Rubber Straining Machines.

The Housatonic Machine and Tool Co.
Bridgeport, Conn.

ESSEX RUBBER COMPANY, Inc.

TRADE MARK

Specialists in Molded Soft Rubber Articles.
Rubber Soles, Heels and Mechanical Specialties.

TRADE MARK

Trenton, New Jersey, U. S. A.

Small Advertisement Department

SITUATIONS WANTED

DIPPED GOODS SPECIALIST AT LIBERTY. TWENTY-FIVE years' experience. Broad knowledge of dipped goods manufacture. Duration of control optional. Address Box No. 8525, care of THE INDIA RUBBER WORLD.

SUPERINTENDENT—RUBBERIZING—OVER TWENTY-FIVE YEARS' experience. Expert on autotop and all kinds of fabric, spreader and calender work. Now open for position. Best of references. Address Box No. 8521, care of THE INDIA RUBBER WORLD.

RECLAIMING EXPERT

Long experience in equipping rubber concerns to produce their own reclaimed rubber, and reorganizing and modernizing existing reclaiming departments. Address Box No. 8523, care of THE INDIA RUBBER WORLD.

TECHNICAL SUPERINTENDENT OF ONE OF LEADING TIRE COMpanies will consider change. Now in charge of all development, compounding and research, also mill and calender departments. Wide acquaintance among technical men in rubber industry. Address Box No. 8536, care of THE INDIA RUBBER WORLD.

ACCOUNTANT, FORTY, AMERICAN, MARRIED, UNIVERSITY training, seeks connection as executive accountant or assistant to busy executive. Fifteen years' experience with large mechanical rubber companies, financial accounting and manufacturing costs. Technical knowledge all departments of office work. Address Box No. 8540, care of THE INDIA RUBBER WORLD.

RUBBER CHEMIST, PH.D., EXPERIENCED IN THE MANUFACTURE of tires and mechanicals, compounding and accelerator research, desires responsible position with concern of standing only. At present employed. Address Box No. 8541, care of THE INDIA RUBBER WORLD.

CHEMIST, EXPERT IN THE USE OF RECLAIMED rubber, desires responsible position with small progressive company. Five years practical experience in the manufacture of pneumatic and solid tires, tubes and mechanicals. Address Box No. 8542, care of The India Rubber World.

CHEMIST, LONG EXPERIENCE IN RUBBER WORK, DEVELOPMENT, research, compounding, and curing. Open for position in September. Address Box No. 8544, care of THE INDIA RUBBER WORLD.

SITUATIONS WANTED—Continued

CHEMIST, UNIVERSITY GRADUATE, 15 YEARS' EXperience in manufacture of rubber goods, particularly tires and tubes, control, development and research work, is open for engagement. Age 40, married. Address Box No. 8543, care of THE INDIA RUBBER WORLD.

TIRE AND TUBE MAN DESIRES CHANGE. NINE YEARS' EXPERIence milling, compounding, processing, construction, curing and airbags. Drum and core built tires. Age, twenty-seven. Address Box No. 8538, care of THE INDIA RUBBER WORLD.

MECHANICAL GOODS SALES MANAGER. TRADE CONNECTIONS and ability to direct, strengthen and build sales organization, to produce sales up in seven figure mark with profit. Twenty years' experience industrial lines. Address Box No. 8555, care of THE INDIA RUBBER WORLD.

EXECUTIVE, HOSE, BELTING, PACKING, MOLDED MECHANICAL lines. Twenty-three years' factory and sales experience. Can install complete organization and develop sales force, handle entire United States territory with high sales volume. Now connected. Desire locating with firm requiring building up; or one wanting to add mechanical lines. Address Box No. 8556, care of THE INDIA RUBBER WORLD.

CHEMIST AND COMPOUNDER, EIGHT YEARS' EXPERIENCE IN tires, tubes, druggists' sundries, vapor-cure stocks, colored goods, factory control, research, development of new compounds and use of accelerators. Desires new position. Can take charge of laboratory. Address Box No. 8553, care of THE INDIA RUBBER WORLD.

AN EXPERIENCED RUBBER ENGINEER AND SALESMAN, HAVING a large acquaintance with rubber manufacturers, seeks position with reputable concern to promote the sale of compounding ingredients, dry colors, accelerators, reclaimed rubber or other materials used in the rubber industry. Address Box No. 8550, care of THE INDIA RUBBER WORLD.

TECHNICAL ENGINEER WANTS POSITION AS FACTORY manager or technical superintendent. Has had nine years' experience as chemist, development engineer and factory manager in the manufacture of tires, tubes and mechanicals. Address Box No. 8561, care of THE INDIA RUBBER WORLD.

HEADQUARTERS
FOR
New and Used Rubber Machinery
UNITED RUBBER MACHINERY EXCHANGE
311-317 Mt. Pleasant Avenue
NEWARK, NEW JERSEY
ENTIRE PLANTS PURCHASED

Having just completed the sale of the
Globe Rubber Tire Manufacturing Co.
TRENTON, NEW JERSEY
we are now in a position to furnish the Rubber Industry with its requirements. We specialize in the purchase of modern machinery or a complete factory.
Write, wire or phone your desires
EQUIPMENT COMPANY, INC.
Office 431, First National Bank Building
TRENTON, N. J.

SUPER RED RECLAIM
LOW VOLUME COSTS
FOR
RED INNER TUBES
FINE WORKING QUALITIES
ASK US
THE DEFIANCE RUBBER COMPANY
DEFIANCE, OHIO

(Advertisements continued on page 72)

A COMPLETE LINE OF

Rainproof Coats Manufactured
for the Wholesale Trade by

The BADGER RAINCOAT CO.

PORT WASHINGTON WISCONSIN

Quality and Workmanship of the Best

Show Rooms For Convenience of Buyers
151 Fifth Ave., New York
410 Medinah Bldg., Chicago
530 Howard St., San Francisco

RECLAIMED RUBBER

HIGH QUALITIES
UNIFORM GRADES
"STANDARDIZED"

VULCAN RECOVERY CO.
Trenton New Jersey

MAGNESIA

WHITTAKER, CLARK & DANIELS, Inc.
250 Front Street, New York

CRUDE RUBBER

BALATA—GUTTA PERCHA
LIQUID RUBBER LATEX

GEO. HANKIN & COMPANY
21 Mincing Lane London, E. C. 3.
Cables: Vademecum Outerly } London

Bibb Manufacturing Co.

Macon, Ga.

TIRE FABRICS OF QUALITY

GUTTA PERCHA PRODUCTS

Diamond B
Adhesive Tissue
Superior Quality

BEMIS ASSOCIATES, Inc.
Watertown, Mass.
Cable Address—"TRUEGUTTA"

Small Advertisement Department—Continued

SITUATIONS WANTED—Continued

MANAGER-SUPERINTENDENT, FIFTEEN YEARS' EXperience in the manufacture of mechanical goods, hard rubber, battery containers and reclaimed rubber. Efficient compounding and production methods. A-1 reference. Address Box No. 8549, care of The India Rubber World.

SITUATIONS OPEN

POSITION OPEN AS SUPERINTENDENT INSULATED WIRE FACtory. Good position for man familiar with rubber compounds and able to get production and handle men. Address Box No. 8528, care of THE INDIA RUBBER WORLD.

SALESMEN WANTED BY MANUFACTURER OF HYDRAULICALLY compressed brake lining, transmission belting, sheet packings, to solicit trade in and around Chicago. Salary and commission. Applications are requested from men who can assume executive positions. Address Box No. 8516, care of THE INDIA RUBBER WORLD.

CALENDER MAN WANTED TO MILL AND CALENDER STOCK AND willing to do all other work. Give experience and past connections. Splendid opportunity for reliable workman. Address Box No. 8557, care of THE INDIA RUBBER WORLD.

R. L. CHIPMAN

Broker in Crude Rubber, Gutta Percha and Allied Gums

23-25 BEAVER STREET NEW YORK

SITUATIONS OPEN—Continued

WANTED: EXPERIENCED OPERATORS FOR RUBBER WASHING plant within twenty miles of New York. Permanent positions and opportunity for advancement for right men. Good pay, working under ideal conditions. Write fully stating experience and salary desired. Address Box No. 8518, care of THE INDIA RUBBER WORLD.

AUTO FABRIC DIVISIONAL HEAD. MUST BE EXPERIENCED and capable of directing, compounding, milling, calendering, spreading and vulcanizing. Business established. Location near New York. Must be capable of producing volume and high quality product. State experience, training and salary expected. Address Box No. 8522, care of THE INDIA RUBBER WORLD.

WANTED: TOY BALL AND TOY FACTORY SUPERINTENDENT TO take full charge of toy ball factory. Must know compounding, manufacture of a complete line of toy balls, including mottled and inlaid designs. Do not apply unless you have had experience in this line of work. To the right man a good financial future is assured in a progressive company. Send fullest particulars to Box No. 8539, care of THE INDIA RUBBER WORLD.

WANTED BY AN OLD AND WELL-ESTABLISHED MECHANICAL rubber goods manufacturing company, an experienced salesman. One who knows New England and the paper mill trade. Give complete information as to qualifications. Confidential. Address Box No. 8545, care of THE INDIA RUBBER WORLD.

A WELL-ESTABLISHED FIRM IN LARGE EASTERN CITY OFFERS a real opportunity to young man qualified to take charge of rubber specialty manufacturing department. Must have knowledge of modern methods and be a real producer on a production basis. College graduate preferred. Moderate salary to start, but department growing rapidly. Write, stating age, qualifications and salary to start. Address Box No. 8520, care of THE INDIA RUBBER WORLD.

WANTED: ALL-ROUND PRACTICAL EXPERIENCED man in making rubber footwear for European factory. Good opportunity for the right man. Any negotiations will be considered strictly confidential. Address Box No. 8514, care of THE INDIA RUBBER WORLD.

FOR SALE

HYDRAULIC HEATERS

36" x 36"—21" Telescoping Ram
60" x 12'—22" Inside Packed Ram

PRESSES

24" x 24"—Single Opening—14" Ram
24" x 24"—2 and 4 Openings—12" Ram
48" x 48"—2 Openings—2-10" Rams
1500 lb. Hydraulic—100 lb. Steam

COMPRESSORS

Ingersoll-Rand, Type X-B, Belt-driven. Fully Enclosed, Including Belt Cylinders 10½ x 5½ x 12. Pressure up to 300 lbs. A-1 Condition.

By-Products Sales Division

THE GOODYEAR TIRE & RUBBER CO.
AKRON, OHIO

MACHINERY

We have purchased the machinery and equipment of the Doss Tire & Tube Co., of Atlanta, Georgia, making it possible for us to offer to the trade some of the finest and most up-to-date equipment on the market, including:

24" x 66" Farrel and Adamson Calenders, Motors, and Drives.
26" x 84" Wellman-Seaver-Morgan Mills, Individual Mills.
20" x 22" x 60" Adamson Mills, Washers and Crackers.
66" Textile Driers, 4 and 6 Drum.
No. 2 and No. 3 Royle Tubing Machines.
Biggs Quick Opening Door Vulcanizers.
Hydraulic Bead Presses.
Laboratory Equipment—Scott Tester, Mill and Calender.
Hydraulic Pumps, Accumulator.
No. 3 Banbury Mixer.

MISCELLANEOUS

Air Compressors, Cement Mixers, Tube Mandrels, Calender Shells, Tube Wrapper, Tube Repair Outfit, Shelf Driers, etc., etc.

L. ALBERT & SON, INC.
TRENTON, NEW JERSEY

(Advertisements continued on page 74)

"Factice is vulcanized vegetable oil. The process consists of hardening and drying various vegetable oils by mixture with sulphur or sulphur chloride."

Extract from *Stamford Advocate.*

CONSULT BANNER Before You Buy

Tire Building Machines
Band Builders
Watch Case Vulcanizers
Tire and Tube Molds
India and DeMattia Chucks and Cores
Tube Wrapper and Unwrapper
Bead Making Machines
Triplex Cement Agitator
Fabrid Dryer
Laboratory Mills, Washers and Refiners
Tire Opening Machine
Flap Vulcanizer
Mill Apron Mechanism
Skid Cutter
Hose Making Machinery

The Banner Machine Company
COLUMBIANA, OHIO
PAUL A. FRANK, Agent
Permanent Title Bldg., Akron, O.

SINCE 1880

Rand

GUARANTEED
RUBBER GOODS
"They Last Longer"

Dress Shields
Rubber Sheetings
Bunny Baby Pants
Sanitary Aprons
Sanitary Elastic Belts
Sanitary Bloomers
Sanitary Stepins
Guimps & Brassierres
Household Aprons
Pure Rubber Sheets
Rubber Bibs
Crib Sheets
Bathing Caps
Rubber Specialties
Powder Puff Pockets

RANDPRINT RUBBER
SHEET GUM cut to pattern for manufacturers
Special Goods To Order

Made by
RAND RUBBER CO., Inc.
Formerly Brooklyn Shield & Rubber Co.
Sumner Ave. & Halsey St., Brooklyn, N. Y., U. S. A.

SR

The Mark of Fine Rubber Goods

Druggists Sundries
Adhesive Plaster
Sporting Goods
Surgeons' Gloves
Industrial Gloves
Household Gloves
Play Balls
Combs
Bath Caps
Tubing
Nipples
Aprons

SPECIAL GOODS TO ORDER

THE SEAMLESS RUBBER CO.
NEW HAVEN, CONN.
Makers of Fine Rubber Goods since 1877
SEND FOR CATALOGUE

Small Advertisement Department—Continued

SITUATIONS OPEN—Continued

WANTED: SALES MANAGER BY A SMALL BUT UP-TO-DATE AND progressive mechanical rubber goods plant located near New York City. We manufacture a complete line of plumbers' and hardware dealers' rubber goods, also a line of specialties. The man we require must have a thorough knowledge of the line and trade and make his headquarters at the plant. Good opportunity for the right man. Reply stating experience, salary, etc. Address Box No. 8551, care of THE INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES

RUBBER FORMULAS: THE LATEST FORMULAS FOR BALLOON and high pressure tires and tubes; quick-cure cements; heels, soles; sponge rubber; belt frictions; dipped goods; reclaiming process. Write for our new list. Rubber Compound Bureau, 727 Second National Building, Akron, O. (8529)

WANTED: TO BUY SMALL PLANT FOR THE MANUFACTURE of toy balloons and seamless goods. Address Box No. 8530, care of THE INDIA RUBBER WORLD.

ESTABLISHED TIRE VULCANIZING BUSINESS IN PHILADELPHIA wishes to start selling mechanical rubber goods and would consider representing manufacturer in Philadelphia territory on commission basis. Have had ten years' experience selling mechanical rubber goods and sundries. Address Box No. 8519, care of THE INDIA RUBBER WORLD.

M. NORTON & COMPANY
MEDFORD, MASS.
New, Old, Cured and Uncured Scrap Rubber
ALL KINDS SECOND HAND RUBBER
MILL MACHINERY BOUGHT AND SOLD
Office and Warehouse, Locust Street, Medford, Mass

FOR SALE

Entire modern equipped tire and tube manufacturing plant with railroad siding and good labor conditions.

Building of brick and steel (daylight) construction three-story and basement sprinkler system and wired throughout.

All complete electric driven machinery A.C. current partly consisting of Sixty-inch Mills, Sixty-six-inch Calenders, Fifty-four-inch Calenders, Large Tubing Machines, Tire Building Machines, Accumulators, Pumps, Generators, Experimental equipment, Presses, Sixty-six-inch Spadone Bias Cutter, Large Southwark T. O. Door Hyd. Vulcanizers, Complete set molds, Balloon, etc., Sand Blasting outfit, complete tube making equipment, consisting of Tube poles (new sizes), Lathes, T. O. Door Vulcanizers, Transfer Carriages, and other items too numerous to mention.

In fact everything necessary for a full equipped modern and up-to-date tire and tube plant.

To be sold regardless of cost with or without building. Suitable terms will be considered.

Plant located in Akron district, for further particulars and information address Box No. 8559, care of The INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES—Continued

FOR SALE: MODERN UP-TO-DATE TIRE AND TUBE MANUFACturing plant in prosperous section of the Northwest. Full day capacity approximately three thousand tires and tubes. If interested give proper references. Address Box No. 8546, care of THE INDIA RUBBER WORLD.

EUROPEAN RUBBER ENGINEER WILL TAKE AGENCY FOR accelerators, chemicals and rubber manufacturing equipment. Thorough acquaintance with European factories. Address Box No. 8547, care of THE INDIA RUBBER WORLD.

FOR SALE: RUBBER FACTORY. THREE-STORY BRICK BUILDING entirely remodeled recently. Situated about ninety miles from New York and twenty-five miles from Philadelphia on the Reading R. R. Plant equipped to make rubber balls, toys, etc. Address Box No. 8552, care of THE INDIA RUBBER WORLD.

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ELECTRICAL EQUIPMENT FOR IMMEDIATE DELIVERY. MILL line motors, 220-volt, 440-volt, 2200-volt. Calender motors, D. C., variable speed. Motor generator sets. Tube machine motors. Most complete stock anywhere. Use our experience. Address Box No. 8532, care of THE INDIA RUBBER WORLD.

1—or More Outside Packed Vulcanizers, 5 Years Old, 48-Inch Diameter, 12-Foot. Stroke, Ram 22-Inch Diameter.

1—500 H.P. Double Helical Reduction Gear, 480/85 R.P.M.
1—48-in. Cutler-Hammer Magnetic Clutch, 500 H.P.—480 R.P.M. } (New)

1—Knight Tire Building Machine. (New)

4—3-Foot, 10¾-Inch Diameter Vulcanizers, 6-Foot Stroke, 12-Inch Ram Pot.

1—4-Foot, 10-Inch Diameter Vulcanizer, 8-Foot, 2-Inch Stroke, 13½-Inch Ram Pot.

1—Complete Mold Conveyer System, 264 Feet Length Over-all, Carrier 2-Feet 6-Inches High by 2-Feet 6-Inches Wide. Photo and B.P. on Request. First class condition.

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SLITTING MACHINES, ACCUMULATORS, BIAS CUTTERS, MASTICATORS, VULCANIZERS, CALENDERS, SPREADERS, REFINERS, WASHERS, PRESSES, TUBERS, CHURNS, DRIERS, MILLS.

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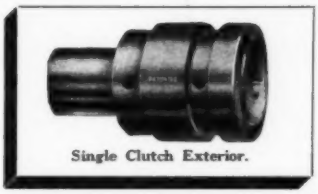
(Advertisements continued on page 76)

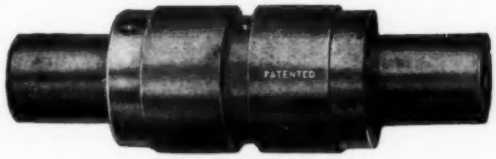
THE JOHNSON FRICTION CLUTCH

For Rubber Machines



Single Clutch Exterior.

Look into the merits of JOHNSON Clutches for your rubber machines. Find out how well they start, stop, brake, and control the machines. JOHNSONS give you the highest type of clutch service known to present-day rubber machine building.



Double Clutch Exterior.

Consider the extensive use in rubber plants given the JOHNSON Clutch. Note its compactness, its great power, its easy operating. Remember also its nationally known reputation in the country's leading rubber plants. Equip your rubber machines with JOHNSON Clutches.

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The Rubber Shortage demands economy in crude and reclaim preparation.

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Infants' Pants
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For Every Rubber Process there is

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SINCE 1769

TAG

Small Advertisement Department

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One used 22 by 60-inch Farrel calender with drive and variable speed motor. Price $3,000.

Three used 150 h.p. McNeil horizontal boilers. All complete. Price, $500 to anyone who will remove them and also all the brick and small brick smoke stack.

Two, 48" by 12", 14" ram hydraulic vulcanizers } all for $1,000
One, 48" by 12', 12" ram hydraulic tire vulcanizer }

We have all kinds rubber machinery for sale, also factories all equipped to manufacture tires and tubes.

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One 48-inch boring mill.
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THE PERSONAL PROPERTY OF THE

FLINTEX CORP.

Matthews & Matthews, Attys. for Bankrupt.
Geo. W. Coppin Trustee. Dawson E. Bradley, Atty. for Trustee.

ON THE PREMISES

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LARGE LOT OF MATERIALS, such as carload of Carbon Black, Zinc Oxide, Magnesia Carbonates, Wood Flour, Soapstone, Asbestos, Roof Cement, Enamels, etc. Large lot of Finished Seats, Battery Boxes, etc. Modern Office Furniture. Auction Catalog by request. Terms of sale cash. Sale conducted by

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FOR SALE BY OWNER: A 66-INCH BY 24-INCH THREE-ROLL stock and friction calender. Only four years old, spur geared, and in splendid condition with all accessories and including 80 h. p. variable speed calender motor with panel. Must be moved at once. Price loaded $3,300. Address Box No. 8569, care of THE INDIA RUBBER WORLD.

FOR SALE: FOUR VACUUM DRIERS: FOUR W. & P. MIXERS;
Four Birmingham mills, 16 by 40;
Farrel refining mill 12 by 24, 17 by 24;
Also complete equipment for rubber plant. Send us your inquiries.

Address Box No. 8531, care of THE INDIA RUBBER WORLD.

ALLEN 20-INCH BY 22-INCH BY 60-INCH HEAVY DUTY MILL, complete. 100 h.p. Falk enclosed reduction drive, Cutler-Hammer clutch, 100 h.p. General Electric motor and starter. This equipment is in excellent condition. Address Box No. 8548, care of THE INDIA RUBBER WORLD.

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WANTED: THREE (3) VACUUM DRIERS.
Two (2) heavy duty mixers.
A few steel rolls.

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THE ADMIAR RUBBER CO.

is soliciting additional business in molded fine rubber goods and specialties. Well equipped. Expert knowledge of rubber business. Ample capital. Painstaking attention to small as well as large jobs.

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DAVIDSON RUBBER COMPANY

Boston - - Mass.

Manufacturers of

"THE BANNER LINE OF FAST SELLERS"

Water Bottles, Fountain Syringes and Baby Nipples

(Advertisements continued on page 77)

Small Advertisement Department

MISCELLANEOUS

FOR SALE TO SETTLE ESTATE

The contents of the Chemical Laboratory of Lothar E. Weber, Ph.D., well known as an expert in the chemistry of rubber, 729 Boylston street, Boston, Massachusetts. The stock includes latest types of rubber testing machine and aging oven, also a chemical library.

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In Collaboration With
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FOR MANUFACTURERS OF RUBBER GOODS AND kindred trades this machine does wonderful work, is speedy, accurate and a great time and labor saver. Over two hundred in use by rubber manufacturers at the present time.

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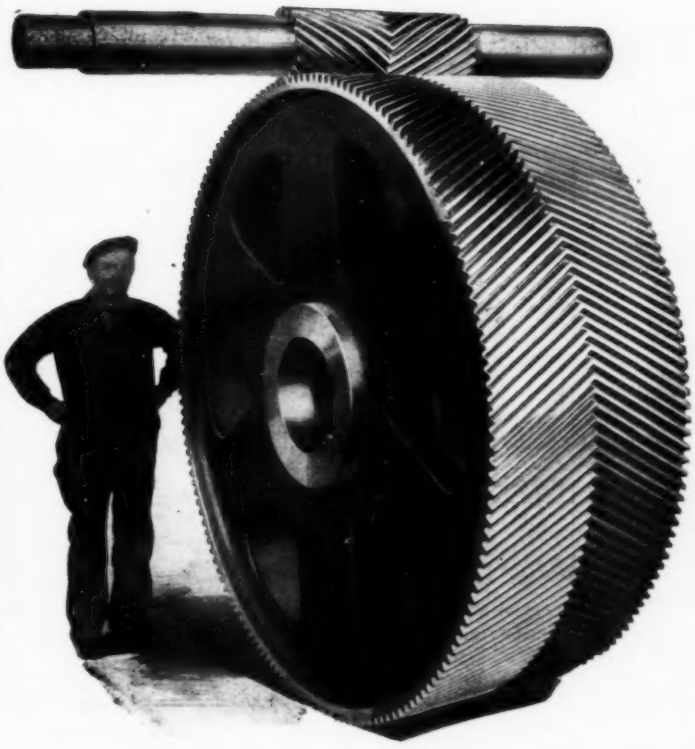

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Three years ago we installed the first machine for cutting these gears.

Three years is a short time in which to develop a large business. Such an achievement must have for its basis a superior product.

A new product can be successfully marketed when it possesses one or all of the following features:—superiority of performance; price not more than the next best; a sufficiently reliable organization behind it to guarantee quality, service and delivery.

Thousands of users have proved to their own satisfaction the superiority of THE GEAR WITH A BACKBONE.

Our service work has set a new standard in the gear business.

Our designs are admitted to be the most advanced and most practical.

It is hardly necessary to refer specifically to the stability of the Company manufacturing the gear. Farrel Foundry & Machine Company was established 1848.

Ask for our literature—it will interest you—write now and read the story of these remarkable gears.

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BUFFALO, N. Y., U. S. A.

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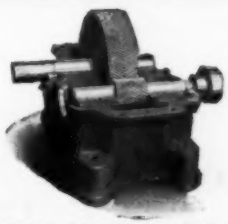

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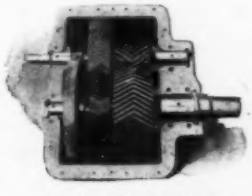

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Canfield Rubber Co., Bridgeport, Conn.
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Dominion Rubber Co., Ltd., Montreal, Canada.
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Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Hale, Alfred, Rubber Co., Atlantic, Mass.
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Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
Oak Hill Rubber Co., Oak Hill, Ohio.
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Quaker City Rubber Co., Phila., Pa.
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United States Rubber Co., New York.
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Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
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Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

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Cincinnati R. M. Co., Cincinnati, O.
Dominion Rubber Co., Ltd., Montreal, Canada.
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Manhattan Rubber Mfg. Co., Passaic, N. J.
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United States Rubber Co., New York.

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Manhattan Rubber Mfg. Co., Passaic, N. J.
United States Rubber Co., New York.

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Thermoid Rubber Co., Trenton, N. J.
Woven Steel Hose & Rubber Co., Trenton, N. J.

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Canfield Rubber Co., Bridgeport, Conn.
Western Rubber Co., Goshen, Ind.

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Gutta Percha and Rubber, Limited, Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
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Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia.
Thermoid Rubber Co., Trenton, N. J.
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Western Rubber Co., Goshen, Ind.

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Western Rubber Co., Goshen, Ind.

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United States Rubber Co., New York.

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Canfield Rubber Co., Bridgeport, Conn.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

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Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., New Haven, Conn.

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Canfield, H. O., Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.

Gaskets, Gasket Rings, Tubing and Washers—Continued.

Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Perfection Rubber Co., Akron, Ohio.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Grain Drill Tubes.

Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Gutta Percha and Rubber, Limited, Toronto, Canada.

Hat Bags

Dominion Rubber Co., Ltd., Montreal, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York.

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Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Western Rubber Co., Goshen, Ind.

Hose—Armored.

Woven Steel Hose & Rubber Co., Trenton, N. J.

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Boston Woven Hose & Rubber Co., Cambridge, Mass.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Western Rubber Co., Goshen, Ind.
Yerdon, William, Fort Plain, N. Y.

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Eclat Rubber Co., The, Cuyahoga Falls, Ohio.

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Vacuum, Dredging Sleeves.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
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For Complete Addresses See Advertisements—Index Page 110

GUM-DIPPING
-the Extra Process for Extra Miles!

The Mark of Quality

This cut-away section of a Firestone Full-Size Gum-Dipped Balloon, shows a single cord greatly magnified and untwisted into fifteen smaller cords which are composed of many little fibers, all of which are thoroughly saturated and insulated with rubber by Gum-Dipping.

Insulates Every Fiber of Every Cord with Rubber

Greater stamina and longer mileage—added safety and comfort—that's what Gum-Dipping, the extra process, gives to Firestone tires.

Gum-Dipping goes to the very heart of every cord, thoroughly saturating and impregnating every fiber with rubber—minimizing internal friction and heat, one of the most persistent causes of tire failures.

Firestone Gum-Dipped Tires are delivering greater economy, safety and comfort in the day-in and day-out service of the largest truck, bus and taxicab fleets—in the battle of tires on race tracks—and on cars of hundreds of thousands of motorists throughout the country.

Because their tire costs will be materially lowered by equipping their cars with Firestone Gum-Dipped Tires—car owners will naturally go to the Firestone Dealer in your locality for better tires and better service.

MOST MILES PER DOLLAR

Firestone

AMERICANS SHOULD PRODUCE THEIR OWN RUBBER . Harvey S. Firestone

RUBBER BUYERS' DIRECTORY—Mechanical Rubber Goods

Hose—Rubber—Continued.

Gutta Percha & Rubber, Limited, Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia Pa.
Thermoid Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
Woven Steel Hose & Rubber Co., Trenton, N. J.

Hose Pipes, Nozzles, Couplings, Clamps, Fittings, Racks and Reels.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Manhattan Rubber Mfg. Co., Passaic N. J.
N. Y. Belting & Packing Co., New York
Southwark Foundry & Machine Co., Philadelphia, Pa.
United States Rubber Co., New York.
Woven Steel Hose & Rubber Co., Trenton, N. J.

Hose—Rubber Lined.

Cotton and Linen.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Cincinnati Rubber Mfg. Co., Cincinnati, O.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Gutta Percha and Rubber, Limited Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
Quaker City Rubber Co., Philadelphia.
Stokes, Jos., Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Woven Steel Hose & Rubber Co., Trenton, N. J.

Hose Linings.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., New York.
Manhattan Rubber Mfg. Co., Passaic, N. J.

Hose Linings—Continued.

New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia
United States Rubber Co., New York

Lawn Sprinklers.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.

Mallets (Rubber).

Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited Toronto, Canada.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
Quaker City Rubber Co., Philadelphia, Pa
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Matting—Carriage Mats and Stair Treads.

Acme Rubber Mfg. Co., Trenton, N. J.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Cincinnati R. M. Co., Cincinnati, O.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
Quaker City Rubber Co., Philadelphia Pa.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Molded Rubber Goods

(See Mechanical Rubber Goods.)

Acme Rubber Mfg. Co., Trenton, N.
Canfield, H. O., Co., Bridgeport, Conn
Canfield Rubber Co., Bridgeport, Conn
Cincinnati R. M. Co., Cincinnati, O.
Davol Rubber Co., Providence, R. I.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Hale, Alfred, Rubber Co., Atlantic, Mass.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J
Manhattan Rubber Mfg Co., Passaic N. J.
New York Belting & Packing Co., New York.
Oak Hill Rubber Co., Oak Hill, Ohio.
Perfection Rubber Co., Akron, Ohio.
Quaker City Rubber Co., Philadelphia.

Molded Rubber Goods—Continued

United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
Whitall Tatum Co., New York

Oil Well Supplies.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Cincinnati Rubber Mfg. Co., Cincinnati Ohio.
Dominion Rubber Co., Ltd., Montreal Canada.
Gutta Percha and Rubber, Limited Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
Quaker City Rubber Co., Philadelphia, Pa
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
White, S. S. Dental Mfg. Co., The Philadelphia, Pa.

Packing.

(See Mechanical Rubber Goods.)

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Cincinnati Rubber Mfg Co. Cincinnati O.
Dominion Rubber Co., Ltd., Montreal, Canada.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber Limited Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic N. J.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Paper Machine Rolls and Deckle Straps.

Dominion Rubber Co., Ltd., Montreal Canada.
Farrel Foundry & Machine Co., Ansonia Conn.
Gutta Percha & Rubber Mfg. Co. Buffalo, N. Y.
Manhattan Rubber Mfg. Co., Passaic N. J.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York

Paving.

Manhattan Rubber Mfg. Co., Passaic N. J.

Plumbers' Supplies.

Force Cups, Fuller Balls.

Acme Rubber Mfg. Co., Trenton, N. J.
Canfield Co., H. O., Bridgeport, Conn.
Canfield Rubber Co., Bridgeport, Conn.
Cincinnati Rubber Mfg. Co., Cincinnati Ohio.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited Toronto, Canada.
Home Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
Quaker City Rubber Co., Philadelphia, Pa
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Rolls—Rubber Covered.

Acme Rubber Mfg. Co., Trenton, N. J.
Cincinnati R. M. Co., Cincinnati, O.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited Toronto, Canada.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic N. J.
New York Belting & Packing Co., N. Y.
Quaker City Rubber Co., Philadelphia, Pa
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Sewing Machine Rubbers.

Canfield Rubber Co., Bridgeport, Conn.
Manhattan Rubber Mfg. Co., Passaic N. J.
Western Rubber Co., Goshen, Ind.

Specialties.

Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Manhattan Rubber Mfg. Co., Passaic N. J.
Oak Hill Rubber Co., Oak Hill, Ohio.
Perfection Rubber Co., Akron, Ohio.
Rand Rubber Co., Inc., Brooklyn, N. Y.

Tiling.

Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Murray Rubber Co., Trenton, N. J.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

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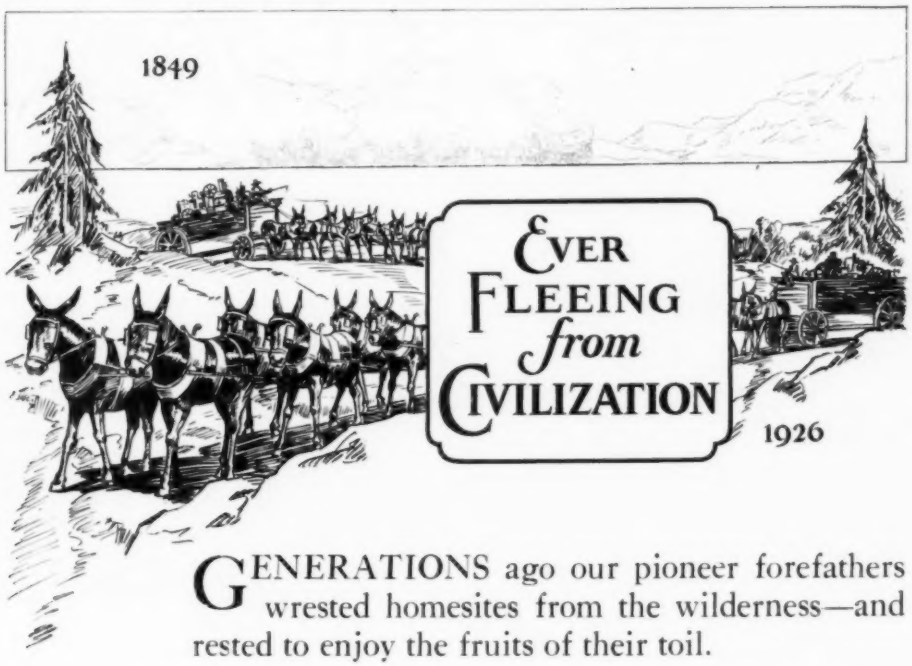


GENERATIONS ago our pioneer forefathers wrested homesites from the wilderness—and rested to enjoy the fruits of their toil.

Generations ago Carbon Black Manufacturers established factories, laid miles of pipe in the wilderness — and found all too soon that civilization had caught up with them and was offering more for natural gas than the price of carbon black permitted them to pay.

Instead of stopping to enjoy the fruits of their toil these manufacturers continually have had to flee from civilization and scrap both machinery and pipe lines.

Leaders in this movement and pioneers in the costly prospecting, needed each year from the first, have been the firm of Godfrey L. Cabot, Inc.

This company feels that any move to insure the fulfillment at reasonable prices of their customers' requirements, is a good move and well worth while.

CARBON BLACK

GODFREY L. CABOT, INC.

940 OLD SOUTH BUILDING, BOSTON.

RUBBER BUYERS' DIRECTORY—Mechanical Rubber Goods, Druggists' and Stationers' Sundries.

Tubing.

(See Mechanical Rubber Goods.)

Acme Rubber Mfg. Co., Trenton, N. J.
American Hard Rubber Co., New York.
Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Cincinnati R. M. Co., Cincinnati, O.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Eclat Rubber Co., The, Cuyahoga Falls, Ohio.
Essex Rubber Co., Trenton, N. J.
Faultless Rubber Co., Ashland, Ohio.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Home Rubber Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Perfection Rubber Co., Akron, Ohio.
Quaker City Rubber Co., Philadelphia, Pa.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.
Whitall Tatum Co., New York.

Valve Discs.

American Hard Rubber Co., New York.
Canfield Rubber Co., Bridgeport, Conn.
Cincinnati R. M. Co., Cincinnati, O.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., N. Y.
Quaker City Rubber Co., Philadelphia, Pa.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Valves.

(See Mechanical Rubber Goods.)

Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Elkhart Rubber Works, Elkhart, Ind.
Essex Rubber Co., Trenton, N. J.
Gutta Percha & Rubber Mfg. Co., Buffalo, N. Y.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Manhattan Rubber Mfg. Co., Passaic, N. J.
New York Belting & Packing Co., New York.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

Valves—Continued.

Western Rubber Co., Goshen, Ind.

Valve Balls—Condensor, Cold and Hot Water.

Hewitt Rubber Co., Buffalo, N. Y.
Home Rubber Co., Trenton, N. J.
Quaker City Rubber Co., Philadelphia, Pa.
Western Rubber Co., Goshen, Ind.

Vulcanized Emery Wheels.

Manhattan Rubber Mfg. Co., Passaic N. J.
New York Belting & Packing Co., New York. (Vulcanite.)
United States Rubber Co., New York.

Wringer Rolls.

Cincinnati R. M. Co., Cincinnati, O.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha & Rubber, Limited, Toronto, Canada.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

DRUGGISTS' AND STATIONERS' SUNDRIES

Atomizers. Nipples.
Bandages. Syringes.
Bulbs. Water Bottles

Druggists' Sundries, Generally

American Hard Rubber Co., New York.
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
Pirelli, Milan, Italy.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York
Vulcanized Rubber Co., New York.
Whitall Tatum Co., New York

Air Goods.

Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York
Whitall Tatum Co., N. Y.

Balloons (Toy).

Faultless Rubber Co., Ashland, Ohio
Perfection Rubber Co., Akron, Ohio.

Balls, Dolls and Toys.

Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

Bathing Caps.

Canfield Rubber Co., Bridgeport, Conn.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Kleinert, I. B., Rubber Co., The, New York.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Bulbs.

Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.
Whitall Tatum Co., New York.

Combination Fountain Syringe and Hot Water Bottle Fixtures

Brass Goods Mfg. Co., Brooklyn, N. Y.
Davidson Rubber Co., Boston, Mass.

Combs.

American Hard Rubber Co., New York.
Seamless Rubber Co., Inc., The, New Haven, Conn.
Vulcanized Rubber Co., New York.

Electricians' and Surgeons' Gloves.

Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York

Erasive Rubbers

Faultless Rubber Co., Ashland, Ohio.

Finger Cots.

Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York
Whitall Tatum Co., N. Y.

Fountain Syringes

Davidson Rubber Co., Boston, Mass
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
United States Rubber Co., New York

Gutta-Percha Tissue.

Bemis Associates, Inc., Watertown, Mass.

Hard Rubber Goods.

American Hard Rubber Co., New York.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., Inc., New Haven Conn.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Vulcanized Rubber Co., New York.
White, S. S. Dental Mfg. Co., The, Philadelphia, Pa.

Hard Rubber Syringe Fittings

Davidson Rubber Co., Boston, Mass.

Hospital Sheetings.

Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Hale, Alfred, Rubber Co., Atlantic Mass.
Kleinert, I. B., Rubber Co., The, New York.
Meade Rubber Co., Stoughton, Mass.
Omo Manufacturing Co., Middleton, Conn.
Plymouth Rubber Co., Inc., Canton, Mass
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

Hot Water Bottles, Throat Bags, Ice Bags and Ice Bag Caps.

Brass Goods Mfg. Co., Brooklyn, N. Y
Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York
Whitall Tatum Co., N. Y.

Life Preservers.

Davol Rubber Co., Providence, R. I.
United States Rubber Co., New York

Nipples.

Davidson Rubber Co., Boston, Mass.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York.
Whitall Tatum Co., N. Y.

For Complete Addresses See Advertisements—Index Page 110

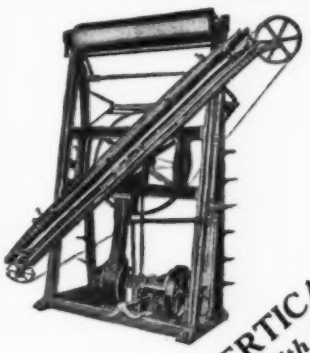
SALMON FALLS MFG. CO.

50 State Street, Boston

TIRE FABRICS

Carded and Combed

SELL DIRECT



THE BOLTON VERTICAL BIAS CUTTER

Accuracy with Speed

Cuts Cord or Flat Woven Fabrics with equal ease and precision.

Cutting Range—1/4" strips to about 60" bias blocks, on any angle from the horizontal to 45 degrees.

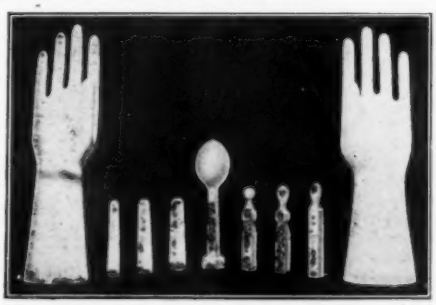
In use in tire and rubber plants throughout the world.

SPADONE MACHINE CO., Inc.
15 Park Row NEW YORK, N. Y.
Foreign Representative
Francis Shaw & Co., Ltd., Manchester, Eng.

S. P. VITRIFIED PORCELAIN FORMS
GUARANTEED AGAINST CRAZING

Largest exclusive manufacturers of Vitrified Porcelain forms for Rubber Dipped Goods. Most Manufacturers use our forms. Repeat orders testify to high quality.

Manager's experience 18 years. Write us your wants.



SEVILLE PORCELAIN CO., SEVILLE, OHIO

COTTON FLOCKS

Guaranteed Free From
Clay, Talc, Chalk or *Any Other*
Foreign Materials

For Manufacturers of
HEELS, SOLES, TILING AND OTHER MECHANICAL RUBBER GOODS

Liberal Working Samples Supplied

CLAREMONT WASTE MFG. CO.
CLAREMONT, DEPT. I NEW HAMPSHIRE

SUPERFINE SULPHUR

Specially prepared to meet the requirements of rubber manufacturers

Refined Flour Sulphur, 100% Pure. **Commercial Flour Sulphur, 99½% Pure.**

BOTH ARE UNEXCELLED IN FINENESS AND UNIFORMITY

Write for Samples, Prices and Pamphlet, "Real Facts About Sulphur"

SOUTHERN ACID & SULPHUR CO.

Complete Stock of Rubbermakers' Sulphur Carried in Akron

Rialto Building, St. Louis, Mo.

Akron Agent:
C. P. HALL CO.
Central Savings and Trust Bldg.
Akron, Ohio

RUBBER BUYERS' DIRECTORY—Druggists' and Stationers' Sundries, Mackintoshed and Surface Goods, Rubber Footwear, Dental and Stamp Rubber, Electrical.

Rubber Bands

Davol Rubber Co., Providence, R. I.
Easthampton Rubber Thread Co., Easthampton Mass.
Empire Tire & Rubber Corp., Trenton, N. J.
Murray Rubber Co., Trenton, N. J.
Seamless Rubber Co., Inc., New Haven Conn.
United States Rubber Co., New York.

Rubber Sponges

Faultless Rubber Co., Ashland, Ohio.
Oak Hill Rubber Co., Oak Hill, Ohio.

Shower Bath Sprinklers.

Brass Goods Mfg. Co., Brooklyn, N. Y.
Davol Rubber Co., Providence.
Hodgman Rubber Co., Tuckahoe, N. Y.
Seamless Rubber Co., Inc., New Haven Conn.

Stationers' Sundries.

American Hard Rubber Co., New York.
Cincinnati Rubber Mfg. Co., Cincinnati Ohio.
Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Stoppers (Hard Rubber)

Davidson Rubber Co., Boston, Mass.

Stoppers (Metal)

Brass Goods Mfg. Co., Brooklyn, N. Y.

Stoppers (Rubber)

Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Faultless Rubber Co., Ashland, Ohio.
New York Belting & Packing Co., N. Y.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Thread.

Easthampton Rubber Thread Co., Easthampton, Mass.
Mechanical Fabric Co., Providence, R. I.
United States Rubber Co., New York.

Tobacco Pouches.

Dominion Rubber Co., Ltd., Montreal, Canada.
United States Rubber Co., New York.

MACKINTOSHED AND SURFACE GOODS.

Airplane and Balloon Cloths.

United States Rubber Co., New York.

Air Mattresses.

Davol Rubber Co., Providence, R. I.
Dominion Rubber Co., Ltd., Montreal, Canada.
United States Rubber Co., New York.

Aprons—Rubber.

Archer Rubber Co., Milford, Mass.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio.
Kleinert, I. B., Rubber Co., The, New York
Omo Manufacturing Co., Middleton, Conn.
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York.

Bellows Cloths.

Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Clifton Manufacturing Co., Boston, Mass
Plymouth Rubber Co., Inc., Canton, Mass
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York.

Bibs.

Canfield Rubber Co., Bridgeport, Conn.
Davol Rubber Co., Providence, R. I.
Faultless Rubber Co., Ashland, Ohio
Kleinert, I. B., Rubber Co., The, New York
Rand Rubber Co., Inc., Brooklyn, N. Y.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Blankets—Camp and Hospital

Archer Rubber Co., Milford, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Clifton Manufacturing Co., Boston, Mass
United States Rubber Co., New York.

Calendering.

Archer Rubber Co., Milford, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Plymouth Rubber Co., Inc., Canton, Mass
Rand Rubber Co., Inc., Brooklyn, N. Y.
United States Rubber Co., New York.

Carriage Ducks and Drills.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Clifton Manufacturing Co., Boston, Mass
Dominion Rubber Co., Ltd., Montreal, Canada.
Plymouth Rubber Co., Inc., Canton, Mass
United States Rubber Co., New York.

Clothing and Mackintoshes

Archer Rubber Co., Milford, Mass.
Badger Raincoat Co., Port Washington Wis.
Clifton Mfg. Co., Boston, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Footwear Co., Hudson, Mass.
Miner Rubber Co., Ltd., The, Granby Quebec.
Pirelli, Milan, Italy.
United States Rubber Co., New York

Corset Materials.

Rand Rubber Co., Inc., Brooklyn, N. Y.

Diving Apparatus.

Hale, Alfred, Rubber Co., Boston, Mass
United States Rubber Co., New York

Dress Shield Material.

Archer Rubber Co., Milford, Mass
Kleinert, I. B., Rubber Co., The, New York.
Omo Manufacturing Co., Middleton, Conn.
Plymouth Rubber Co., Inc., Canton, Mass
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York

Horse Covers.

Dominion Rubber Co., Ltd., Montreal, Canada.

Horse Cover Material.

United States Rubber Co., New York

Player Piano Cloth.

Archer Rubber Co., Milford, Mass.
Schwarzwaelder Co., The, Philadelphia, Pa.
Toledo Auto Fabrics Co., Toledo, Ohio.
United States Rubber Co., New York.

Ponchos.

Archer Rubber Co., Milford, Mass.
Clifton Manufacturing Co., Boston, Mass
United States Rubber Co., New York.

Printing on Rubber Surface.

Archer Rubber Co., Milford, Mass.
Plymouth Rubber Co., Inc., Canton, Mass
Rand Rubber Co., Inc., Brooklyn, N. Y.

Proofing.

Archer Rubber Co., Milford, Mass.
Archer-Strauss Rubber Co., Framingham Mass.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Hale, Alfred, Rubber Co., Atlantic, Mass
Miner Rubber Co., Ltd., The, Granby Quebec.
Plymouth Rubber Co., Inc., Canton, Mass
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia Pa.
Toledo Auto Fabrics Co., Toledo, Ohio.
United States Rubber Co., New York.

Rubber Coated Cloths.

Archer Rubber Co., Milford, Mass.
Archer-Strauss Rubber Co., Framingham, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Clifton Manufacturing Co., Boston, Mass
Dominion Rubber Co., Ltd., Montreal, Canada.
Hale, Alfred, Rubber Co., Atlantic, Mass
Mechanical Fabric Co., Providence, R. I.
Plymouth Rubber Co., Inc., Canton, Mass
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia Pa.
Toledo Auto Fabrics Co., Toledo, Ohio.
United States Rubber Co., New York.

Tape—Adhesive.

Remis Associates, Inc., Watertown, Mass

RUBBER FOOTWEAR

Boots and Shoes.

Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Footwear Co., Hudson, Mass.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Miner Rubber Co., Granby, Quebec.
United States Rubber Co., New York

Heels.

Meade Rubber Co., Stoughton Mass
Miner Rubber Co., Ltd., The Granby Quebec.
Plymouth Rubber Co., Inc., Canton, Mass

Heels and Soles.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Hale, Alfred, Rubber Co., Atlantic, Mass.
United States Rubber Co., New York.
Western Rubber Co., Goshen, Ind.

Heel Burrs.

Sessions, J. H., & Son, Bristol, Conn.
Ward & Andre, Brockton, Mass.

Heel Nails.

United Shoe Machinery Corporation, Boston, Mass.

Shoe Findings and Specialties.

Clifton Manufacturing Co., Boston, Mass
Essex Rubber Co., Trenton, N. J.
Meade Rubber Co., Stoughton, Mass.
United States Knitting Co., Pawtucket, Mass.
United States Rubber Co., New York.

Soles—Crêpe.

Hale, Alfred, Rubber Co., Atlantic, Mass.

Soling—Crêpe.

Buckleton & Company, Limited, Liverpool, England.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Hankin, Geo., & Co., London, England.
Henderson Brothers & Co., Inc., New York City.
Jacoby, Ernest, Boston, Mass.

Wading Pants.

Dominion Rubber Co., Ltd., Montreal, Canada.
Hale, Alfred, Rubber Co., Boston, Mass
Rand Rubber Co., Inc., Brooklyn, N. Y.
Schwarzwaelder Co., The, Philadelphia, Pa.
United States Rubber Co., New York.

DENTAL AND STAMP RUBBER.

Dental Gum.

Rand Rubber Co., Inc., Brooklyn, N. Y.
United States Rubber Co., New York.
White, S. S., Dental Mfg. Co., The, Philadelphia, Pa

Dentists' Sundries.

United States Rubber Co., New York.

Rubber Dam.

Davol Rubber Co., Providence, R. I.
Plymouth Rubber Co., Inc., Canton, Mass
Rand Rubber Co., Inc., Brooklyn, N. Y.
United States Rubber Co., New York.

Sponge Rubber.

Faultless Rubber Co., Ashland, Ohio.
Oak Hill Rubber Co., Oak Hill, Ohio.

Stamp Gum.

Gutta Percha & Rubber, Limited, Toronto, Canada.
United States Rubber Co., New York.

ELECTRICAL.

Battery Sealing Compounds.

Robertson, H. H., Co., Pittsburgh, Pa.
Vanderbilt, R. T., New York, N. Y.

Electrical Supplies.

American Hard Rubber Co., New York.
Canfield Rubber Co., Bridgeport, Conn.
Stokes, Joseph, Rubber Co., Trenton, N. J.

For Complete Addresses See Advertisements—Index Page 110

CARBON BLACK

An inert pigment which smooths and toughens tire compounds and materially lessens claims for adjustments.

Equally adapted to other compounds where durability and resiliency are required.

SEAVER & CO. Established 1882 60 SCOLLAY SQUARE BOSTON, MASS.

VARNISHES FOR RUBBER COMPOUNDS

We Offer Our Technical Service Department to Solve Your Problems

THE MONROE SANDER CORPORATION
Allied with the National Varnish Co.
47-02 Fifth Street LONG ISLAND CITY, N. Y.

Materials for Rubber Industries

THE H. J. ADAMS COMPANY
Second National Building AKRON, OHIO

MOLDS for RUBBER HEELS and SOLES

WITH OUR MODERN MACHINERY EQUIPMENT AND LABOR SAVING DEVICES, WE CAN QUOTE THE HEEL AND SOLE MANUFACTURER ATTRACTIVE PRICES.

Immediate Shipment.

LEVI C. WADE
650 SUMMER ST. LYNN, MASS.

It's H-P-M for the HIGH PRESSURE jobs

In the RUBBER AND ALLIED Industries this includes Hydraulic Presses for —

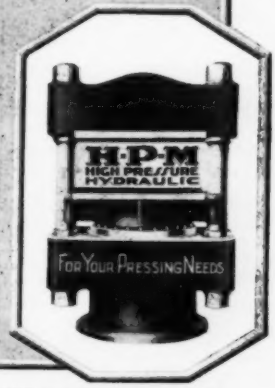
Rubber Curing or Vulcanizing

Monoblock Battery Box Molding,(Rubber or Composition).

Thermo-plastic Molding with Bakelite, Pyroxalin Plastics, etc.

Solid Rubber Tire Applying

also Hydraulic Pumps, Accumulators, Valves, Controls and Fittings



THE HYDRAULIC PRESS MFG. CO.
Engineers — Builders of
HIGH PRESSURE HYDRAULIC MACHINERY
TWENTY EAST BROAD, COLUMBUS, OHIO
PLANT — MOUNT GILEAD, OHIO.

DRYERS AND WATER SEPARATORS FOR RECLAIMED RUBBER

Can Name Attractive Prices on Castings, Forgings, Plate Work and Special Machinery

AMERICAN PROCESS CO.
68 WILLIAM ST., N. Y. CITY.

RUBBER BUYERS' DIRECTORY—Electrical, Sporting Goods, Rubber Tires and Accessories, Rubber Machinery.

Electrical Supplies—Continued.

United States Rubber Co., New York.
Vulcanized Rubber Co., New York.

Hard Rubber Goods.

American Hard Rubber Co., New York.
Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Stokes, Joseph, Rubber Co., Trenton, N. J.
United States Rubber Co., New York.
Vulcanized Rubber Co., New York.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Insulating Compounds.

Canfield Rubber Co., Bridgeport, Conn.
Dominion Rubber Co., Ltd., Montreal, Canada.
Gutta Percha and Rubber, Limited, Toronto, Canada.
Robertson, H. H., Co., Pittsburgh, Pa.
Syson Bros., Inc., Woodbridge, N. J.

Insulated Wire and Cables.

Kerite Ins. Wire & Cable Co., N. Y.
Pirelli, Milan, Italy.
United States Rubber Co., New York.
Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Splicing Compounds.

Appleton Rubber Co., Franklin, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Home Rubber Co., Trenton, N. J.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Tape—Cloth Friction.

Appleton Rubber Co., Franklin, Mass.
Boston Woven Hose & Rubber Co., Cambridge, Mass.
Canfield Rubber Co., Bridgeport, Conn.
Clifton Manufacturing Co., Boston, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Home Rubber Co., Trenton, N. J.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Tape—Rubber Insulating.

Appleton Rubber Co., Franklin, Mass.
Clifton Manufacturing Co., Boston, Mass.
Plymouth Rubber Co., Inc., Canton, Mass.
United States Rubber Co., New York.

Wire—Rubber Insulated.

United States Rubber Co., New York.

Wire—Lead Covered.

United States Rubber Co., New York.

SPORTING GOODS.

Foot Balls.

Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., Inc., The, New Haven, Conn.
United States Rubber Co., New York.

Golf Balls.

Faultless Rubber Co., Ashland, Ohio.
United States Rubber Co., New York.

Sporting Goods.

Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Pennsylvania Rubber Co., Jeannette, Pa.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Striking Bags

Dominion Rubber Co., Ltd., Montreal, Canada.
Seamless Rubber Co., Inc., New Haven, Conn.
United States Rubber Co., New York.

Tennis Balls.

Faultless Rubber Co., Ashland, Ohio.
Pennsylvania Rubber Co., Jeannette, Pa.

RUBBER TIRES AND ACCESSORIES.

Accessories.

Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Firestone Tire & Rubber Co., Akron, Ohio
Fisk Rubber Co., Chicopee Falls, Mass.
General Tire & Rubber Co., Akron, Ohio
Gutta Percha & Rubber, Limited, Toronto, Canada.
United States Rubber Co., New York.

Auto Top Fabrics.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Dominion Rubber Co., Ltd., Montreal, Canada.
Lawrence & Co., New York.
Plymouth Rubber Co., Inc., Canton, Mass
Toledo Auto Fabrics Co., Toledo, Ohio.
United States Rubber Co., New York.

Bead Braid (Wire).

National-Standard Co., Niles, Mich.

Inner Tubes.

Acme Rubber Mfg. Co., Trenton, N. J.
Dominion Rubber Co., Ltd., Montreal, Canada.
Eclat Rubber Co., The, Cuyahoga Falls, Ohio.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., The, Chicopee Falls Mass.
General Tire & Rubber Co., Akron, Ohi
Gutta Percha & Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Pennsylvania Rubber Co., Jeanette, Pa.
Quaker City Rubber Co., Philadelphia Pa.
United States Rubber Co., New York.

Mats—Automobile.

(See Matting and Mechanical Rubber Goods.)

Repair Stock.

Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., New York.
General Tire & Rubber Co., Akron, Ohio.
United States Rubber Co., New York.

Tires (Auto).

Acme Rubber Mfg. Co., Trenton, N. J.
Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio.
Fisk Rubber Co., Chicopee Falls, Mass.
General Tire & Rubber Co., Akron, Ohio.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Hewitt Rubber Co., Buffalo, N. Y.
Pennsylvania Rubber Co., Jeannette, Pa.
Pirelli, Milan, Italy.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

Tires—Baby Carriage.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Cincinnati Rubber Mfg. Co., Cincinnati, Ohio.
Eclat Rubber Co., The, Cuyahoga Falls, Ohio.
Gutta Percha & Rubber, Limited, Toronto, Canada.
Quaker City Rubber Co., Philadelphia, Pa.
United States Rubber Co., New York.

Tires (Bicycle).

Fisk Rubber Co., Chicopee Falls, Mass.
Pennsylvania Rubber Co., Jeannette, Pa

Tires (Motorcycle).

Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio
Fisk Rubber Co., Chicopee Falls, Mass
Pennsylvania Rubber Co., Jeannette, Pa

Tires (Solid).

Dominion Rubber Co., Ltd., Montreal, Canada.
Firestone Tire & Rubber Co., Akron, Ohio
Fisk Rubber Co., Chicopee Falls, Mass
Gutta Percha & Rubber, Limited, Toronto, Canada.
United States Rubber Co., New York.

Tire Fabrics (See Cotton Goods in Raw Materials and Supplies).

Tire Repair Materials.

Essex Rubber Co., Trenton, N. J.
Firestone Tire & Rubber Co., Akron, Ohio
Fisk Rubber Co., Chicopee Falls, Mass.

Wire Bead Braids (Flat).

National-Standard Co., Niles, Mich.

RUBBER MACHINERY.

Accumulators—Hydraulic.

Adamson Machine Co., The, Akron, O.
Akron Equipment Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Burroughs Co., The, Newark, N. J.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Farrel F. & M. Co., Ansonia, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Utility Manufacturing Co., Cudahy, Wis.
Watson-Stillman Co., The, New York.
Williams F. & M. Co., Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

Acid Tanks

Devine, J. P., Co., Buffalo, N. Y.

Air Compressors.

Williams F. & M. Co., Akron, Ohio.

Band Cutting Machines.

Adamson Machine Co., The, Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Utility Manufacturing Co., Cudahy, Wis.

Barometers, Hydrometers and Pyrometers.

Bristol Co., The, Waterbury, Conn.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

For Complete Addresses See Advertisements—Index Page 110

MONTH *after* MONTH
YEAR *after* YEAR
BATCH *after* BATCH

MINERAL rubbers look pretty much alike in a compound box. Differences show up in the mill—in the finished product—in service.

You're interested in *results*—uniformity of results. And that is why you will be interested in Robertson Mineral Rubber.

Robertson Mineral Rubber, put to the day-after-day, month-after-month, year-after-year test, shows a uniformity of result that makes it unwise to "shop around."

H. H. ROBERTSON COMPANY
Pittsburgh, Pa.

Factories: Ambridge, Pa., Sarnia, Ont.
Branch Offices: In all principal cities in the United States.
For Europe and Australia: Sales Agents, Beahan & Sainsbury, 4 Mincing Lane, London, E. C., 3 England.
For Canada: H. H. Robertson Co., Ltd., Sarnia. General Sales Agents for Canada, Garnet Lea, 289-291 Sumach St., Toronto, Ont., Canada.

ROBERTSON MINERAL RUBBER

For Skiving Fabric or Cord Tire Patches and Reliners

Pluma Skiving Machine Model G

THIS machine is particularly adapted for skiving all kinds of material used in the manufacture and reclaiming of Auto Tires. In Rubber Shoe Factories it is used to advantage in skiving counters also rubber soles and heels where a rolled edge is desired.

It is equipped with a steel feed roll especially suited for this class of work, also with a power driven top presser roll. These features together with a knife 6 inches in diameter enables the operator to skive a uniform wide bevel scarf. A water device for wetting the knife when used for skiving rubber is also provided.

Our nearest branch office will be pleased to send further particulars upon request

UNITED SHOE MACHINERY CORP.
BOSTON, MASSACHUSETTS

Branches

Auburn, Me., 87 Main
Brockton, Mass., 93 Centre
Cincinnati, O., 708 Broadway
Chicago, Ill., 18 South Market
Haverhill, Mass., 145 Essex
Johnson City, N. Y., 276 Main
Lynn, Mass., 306 Broad
Marlboro, Mass., 11 Florence
Milwaukee, Wis., 258 Fourth
New Orleans, La., 216 Chartres
New York, N. Y., 37 Warren
Philadelphia, Pa., 231 North 13th
Rochester, N. Y., 130 Mill
St. Louis, Mo., 1423 Olive
San Francisco, Cal., 859 Mission

RUBBER BUYERS' DIRECTORY—Rubber Machinery.

Bead Flippers.

Utility Manufacturing Co., Cudahy, Wis.

Bead Presses.

Allen Machine Co., Erie, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Utility Manufacturing Co., Cudahy, Wis.
Williams Foundry & Machine Co., The, Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

Bead Trimmers.

Banner Machine Co., The, Columbiana, Ohio
Bridgwater Machine Co., Akron, Ohio.

Belt Folding Machines.

Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.

Belt Slitters.

Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.

Belt Stretchers.

Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.

Bias Cutters.

Birmingham Iron Foundry, Derby, Conn.
Spadone Machine Co., Inc., New York.

Blanking Rolls.

Burroughs Co., The, Newark, N. J.

Boilers.

de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Thropp, William R., Sons' Co., Trenton, N. J.

Braiders, Hose.

New England Butt Co., Providence, R. I.

Brushing Machines and Brushes.

Curtis & Marble Mach. Co., Worcester, Mass.

Brass Fittings.

Boston Woven Hose & Rubber Co., Cambridge, Mass.
Bridgwater Machine Co., Akron, Ohio.

Buffing Machines.

Banner Machine Co., The, Columbiana, Ohio
Utility Manufacturing Co., Cudahy, Wis.
Williams Foundry & Machine Co., The, Akron, Ohio.

Burrs—Light Steel for Rubber Heels.

Sessions, J. H., & Son, Bristol, Conn.

Calenders.

Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Black Rock Mfg. Co., Bridgeport, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Calenders—Brake Lining.

Allen Machine Co., Erie, Pa.
Black Rock Mfg. Co., The, Bridgeport, Conn.

Calender Screw-Down — Motor Driven.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Castings.

Adamson Machine Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Foundry, Derby, Conn.

Castings—Continued.

De Mattia Bros., Garfield, N. J.
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.
Williams F. & M. Co., Akron, Ohio.

Cell Dryers

Butterworth, H. W., & Sons Co., Philadelphia, Pa.

Chemical Plants.

Devine, J. P., Co., Buffalo, N. Y.

Chucks—Lathe and Drill.

Hoggson & Pettis Mfg. Co., New Haven, Conn.

Cloth Dryers.

Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Fdry., Derby, Conn.
Butterworth, H. W., & Sons Co., Philadelphia, Pa.
Farrel F. & M. Co., Ansonia, Conn.
Textile-Finishing Machinery Co., Providence, R. I.

Clutch Brakes—Pneumatic.

Birmingham Iron Foundry, Derby, Conn.

Clutches—Friction.

Allen Machine Co., Erie, Pa.
Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Johnson, Carlyle, Machine Co., The, Manchester, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.
Williams F. & M. Co., Akron, Ohio.

Combustion Recorders.

Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Controllers—Electrical.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Controllers—Temperature-Pressure.

Bristol Co., The, Waterbury, Conn.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Couplings.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia, Conn.

Couplings—Flexible and Rigid

Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia Conn.

Crackers.

Adamson Machine Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Cranes.

Southwark Foundry & Machine Co., Philadelphia, Pa.

Cranes—Hydraulic.

Watson-Stillman Co., The, New York.

Cutters—Crude Rubber.

Peerless Machine Co., The, Racine, Wisc.

Cutters—Scrap.

Taylor, Stiles & Co., Riegelsville, N. J.

Cutters—Sole.

Wellman Co., Medford, Mass.

Cutters—Tire Section.

Adamson Machine Co., The, Akron, Ohio.
Banner Machine Co., Columbiana, Ohio
Peerless Machine Co., The, Racine, Wisc.

Densimeters.

Stowe & Woodward Co., Newton Upper Falls, Mass.

Devulcanizers.

Biggs Boiler Works Co., The, Akron, O.

Die Sinking and Engraving.

Burroughs Co., The, Newark, N. J.

Die Blocks.

Hoggson & Pettis Mfg. Co., The, New Haven, Conn.

Dies.

Akron Equipment Co., The, Akron, O.
Burroughs Co., The, Newark, N. J
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Housatonic Mach. & Tool Co., Bridgeport, Conn.
Kuhn & Jacob Machine & Tool Co., Trenton, N. J.
Mechanical Mold & Machine Co., The, Akron, Ohio.
Terkelsen Machine Co., Boston, Mass.
Williams F. & M. Co., Akron, Ohio.

Dipped Goods Forms (Porcelain).

Colonial Insulator Co., The, Akron, Ohio.
Seville Porcelain Co., Seville, Ohio.

Doubling Machines.

Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn
Utility Manufacturing Co., Cudahy, Wis.

Drives—Mill

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Drying and Processing.

Carrier Engineering Corp, Newark N. J.

Drying Machines.

Allen Machine Co., Erie, Pa.
American Process Co., New York.
Birmingham Iron Foundry, Derby, Conn.
Carrier Engineering Corp, Newark N. J.
Devine, J. P., Co., Buffalo, N. Y.
Farrel F. & M. Co., Ansonia, Conn.
Louisville Drying Machinery Co., Louisville, Ky.
Textile-Finishing Machinery Co., Providence, R. I.

Duck Slitters.

Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia Conn.

Durometers.

Shore Instrument & Mfg. Co The, Jamaica, N. Y.

Electrical Safety Switches.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Embossing Calenders.

Allen Machine Co., Erie, Pa.
Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Textile-Finishing Machinery Co., Providence, R. I.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Engineering Devices.

Yarnall-Waring Co., Philadelphia, Pa.

Engines—Steam.

de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Thropp, William R., Sons' Co., Trenton, N. J.

Engraving Rolls.

Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

Engraving—Tire Molds.

Akron Equipment Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio
Bridgwater Machine Co., Akron, Ohio.
De Mattia Bros., Garfield, N. J.
Utility Manufacturing Co., Cudahy, Wis.
Williams Foundry & Machine Co., The, Akron, Ohio.

Evaporators.

Devine, J. P., Co., Buffalo, N. Y.

Eyeletting Machines.

United Shoe Machinery Corporation, Boston, Mass.

Fittings.

Bridgwater Machine Co., Akron, Ohio.
Utility Manufacturing Co., Cudahy, Wis.

Fittings—Hydraulic Pipe.

Watson-Stillman Co., The, New York.

Gages.

Bristol Co., The, Waterbury, Conn.
Hoggson & Pettis Mfg. Co., New Haven, Conn.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.
Utility Manufacturing Co., Cudahy, Wis.

Gages—Thickness.

Hoggson & Pettis Mfg. Co., New Haven, Conn.
Randall, Frank E., Waltham, Mass.

Gear Cutting.

Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.

Gears.

Spring.
Silent Chain.
Compensating.

Allen Machine Co., Erie, Pa.
Farrel Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.

Gears—Helical.

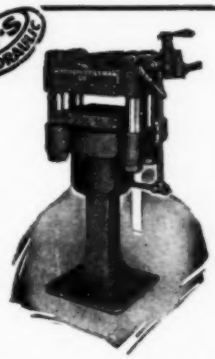
Farrel Foundry & Machine Co., Ansonia, Conn.

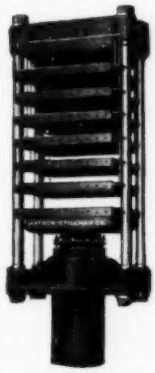
Gears-Herringbone.

Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia, Conn.

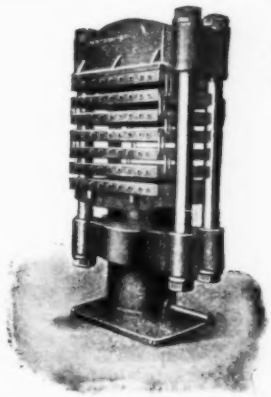
For Complete Addresses See Advertisements—Index Page 11

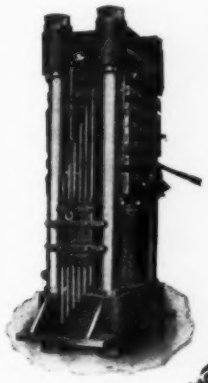
HYDRAULIC PRESSES





FOR HOT AND COLD MOULDING RUBBER, CELLULOID, FIBRE, MICA, BAKELITE, REDMANOL AND SHELLAC COMPOSITION ARTICLES SUCH AS RADIO PARTS, TELEPHONE RECEIVERS, INSULATING PARTS, RADIATOR CAPS, AUTO PARTS, PHONOGRAPH RECORDS, ETC.





We show here just a few examples from our large line. They are made in standard sizes from 10 to 1,800 tons capacity and the number of plates and size of openings can be made to suit conditions.

We are prepared to furnish complete hydraulic installations, including pumps, accumulators, valves, fittings, etc.

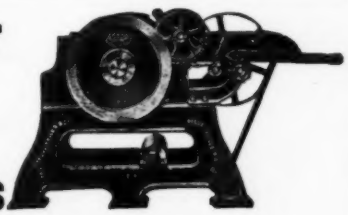
Write for catalogs.

THE WATSON-STILLMAN CO. 20 CARLISLE STREET NEW YORK CITY

CHICAGO CLEVELAND PHILADELPHIA DETROIT ST. LOUIS

Rubber Scrap Cutters

TAYLOR, STILES & COMPANY GIANT REG. U.S. PAT. OFF. RIEGELSVILLE, N.J. U.S.A.

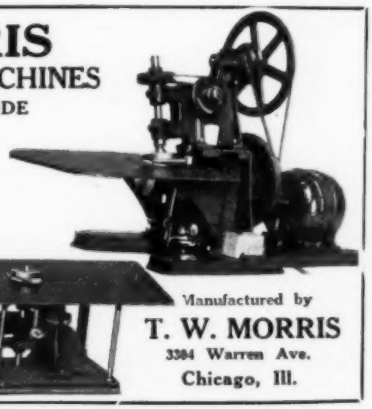


Will Properly Cut Up Your Rubber Scrap
Make the Work Easier for the Cracker.

TAYLOR, STILES & COMPANY, Riegelsville, N. J.

R. J. MARX, 133 Finsbury Pavement, LONDON, E. C., ENG.
Sole Agent for Europe

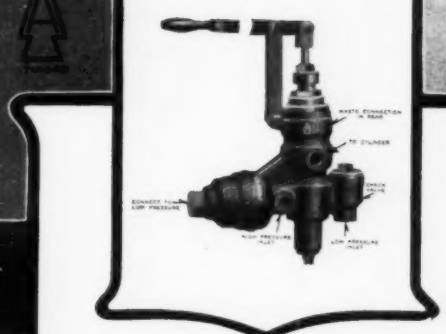
MORRIS
TRIMMING MACHINES
INSIDE—OUTSIDE



Development of thirty years practical experienc

Manufactured by
T. W. MORRIS
3384 Warren Ave.
Chicago, Ill.

STUART Operating TWO PRESSURE Valves



Our type "B" Stuart Two Pressure Operating Valve illustrated consists essentially of a low pressure valve, a high pressure valve an exhaust valve and a check valve. The check valve is of the leather faced lift type, while all other valves are of the pistol type packed with rings of hydraulic duck packing.

All packers may be quickly and cheaply renewed when worn out

Let us send complete information

PITTSBURGH VALVE FOUNDRY & CONSTRUCTION CO.
PITTSBURGH, PA.

RUBBER BUYERS' DIRECTORY—Rubber Machinery.

Gears—Reduction.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
De Laval Steam Turbine Co., The, Trenton, N. J.
Farrel Foundry & Machine Co., Ansonia, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Utility Manufacturing Co., Cudahy, Wis.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Gears—Worm

De Laval Steam Turbine Co., The, Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.

Grinders—See Mixers.

Hangers.

Birmingham Iron Fdry., Derby, Conn.
Fawcus Machine Co., Pittsburgh, Pa.
Farrel F. & M. Co., Ansonia, Conn.

Heater Presses.

Adamson Machine Co., The, Akron, Ohio
Akron Equipment Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Southwark Foundry & Machine Co., Philadelphia, Pa.
Williams Foundry & Machine Co., The, Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

Hoists.

Utility Mfg. Co., Cudahy, Wis.

Hoists—Hydraulic.

Utility Manufacturing Co., Cudahy, Wis.
Watson-Stillman Co., The, New York.

Hose Looms.

Royle, John, & Sons, Paterson, N. J.

Hose Machines.

Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
New England Butt Co., Providence, R. I.

Hose Covering Take-Up Reels.

H. Monroe Smith, Passaic, N. J.

Hose Wiring Machines.

Adamson Machine Co., The, Akron, Ohio.

Hydraulic Valves.

Birmingham Iron Foundry, Derby, Conn.
Manning & Boschert Press Co., Inc., The, Syracuse, N. Y.
Pittsburgh Valve Foundry & Construction Co., Pittsburgh, Pa.
Parnall-Waring Co., Philadelphia, Pa.

Insulating Machinery

Adamson Machine Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Biggs Boiler Works Co., The, Akron, Ohio.
Farrel Foundry & Machine Co., Ansonia, Conn.
Housatonic Machine & Tool Co., Bridgeport, Conn.
New England Butt Co., Providence, R. I.
Royle, John, & Sons, Paterson, N. J.

Jar Ring and Washer Cutting Machines.

Black Rock Mfg. Co., Bridgeport, Conn

Laboratory Apparatus.

Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Bristol Co., The, Waterbury, Conn.
Shore Instrument & Mfg. Co., The, Jamaica, N. Y.
Toledo Scale Co., Toledo, Ohio.

Laboratory Machinery.

Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Biggs Boiler Works Co., The, Akron, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Devine, J. P., Co., Buffalo, N. Y.
Farrel Foundry & Machine Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Lathes—Hard Rubber.

Adamson Machine Co., The, Akron, O.

Lathes—Jar Ring.

Adamson Machine Co., The, Akron, O.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Thropp, William R., Sons' Co., Trenton N. J.

Lead Press Take-Up Reels.

H. Monroe Smith, Passaic, N. J.

Machinery, Transmission (Power).

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Machinists' Tools.

Hoggson & Pettis Mfg. Co., New Haven Conn.

Magnetic Clutches and Brakes.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.

Mandrels—Circular. Aluminum

Lowe, Clyde E., Co., Cleveland, Ohio.

Mandrels—Sherardizing.

Biggs Boiler Works Co., The, Akron, O.
New Haven Sherardizing Co., New Haven, Conn.

Mandrels—Tube Splicing.

Williams Foundry & Machine Co., The, Akron, Ohio.

Masticators.

Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia Conn.

Measuring Rolls.

Curtis & Marble Mach. Co., Worcester Mass.

Mixers.

Adamson Machine Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa.
Biggs Boiler Works Co., The, Akron Ohio.
Birmingham Iron Foundry, Derby, Conn
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Farrel Foundry & Machine Co., Ansonia Conn.
Thropp, William R., Sons' Co., Trenton N. J.
Vaughn Machinery Co., Cuyahoga Falls Ohio

Mixers—Automatic.

Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia Conn.

Molds.

Adamson Machine Co., The, Akron, O.
Akron Equipment Co., The, Akron, Ohio
Akron Rubber Mold and Machine Co. Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Banner Machine Co., The, Columbiana Ohio.
Birmingham Iron Foundry, Derby, Conn.
Bridgwater Machine Co., Akron, Ohio.
Brockton Tool Co., Brockton, Mass.
Burroughs Co., The, Newark, N. J.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
De Mattia Bros., Garfield, N. J.
Hayden, A. C., Co., Brockton, Mass.
Hoggson & Pettis Mfg. Co., New Haven Conn.
Housatonic Mach. & Tool Co., Bridgeport, Conn.
Kuhlke Machine Co., Akron, Ohio.
Kuhn & Jacob Machine & Tool Co., Trenton, N. J.
Mahlow & Wyckoff, Trenton, N. J.
Mechanical Mold & Machine Co., The Akron, Ohio.
Reynolds Machine Co., The, Massillon Ohio.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Terkelsen Machine Co., Boston, Mass.
Williams Foundry & Machine Co., Akron, O.

Molds—Druggists' Sundries.

Hoggson & Pettis Mfg Co., The, New Haven, Conn.
Kuhn & Jacob Machine & Tool Co., Trenton, N. J.
Mechanical Mold & Machine Co., Akron, Ohio.

Molds—Engraving.

Banner Machine Co., The, Columbiana, Ohio.
Bridgwater Machine Co., Akron, Ohio.
De Mattia Bros., Garfield, N. J.
Reynolds Machine Co., The, Massillon, Ohio.
Utility Manufacturing Co., Cudahy, Wis.
Williams Foundry & Machine Co., The, Akron, Ohio.

Molds—Heels and Soles.

Brockton Tool Co., Brockton, Mass.
Hayden, A. C., Co., Brockton, Mass.
Hoggson & Pettis Mfg. Co., New Haven Conn.
Kuhn & Jacob Machine & Tool Co. Trenton, N. J.
Mechanical Mold & Machine Co., Akron Ohio.
Terkelsen Machine Co., Boston, Mass
Wade, Levi C., Lynn, Mass

Molds—Mechanical Rubber Goods.

Adamson Machine Co., Akron, Ohio.
Bridgwater Machine Co., Akron, Ohio.
Kuhn & Jacob Machine & Tool Co. Trenton, N. J.
Mechanical Mold & Machine Co., Akron Ohio.
Terkelsen Machine Co., Boston, Mass.
Wade, Levi C., Lynn, Mass.

Molds and Cores—Tires.

Adamson Machine Co., The, Akron, O
Akron Equipment Co., Akron, Ohio
Akron Rubber Mold & Machine Co., Akron, O.
Akron Standard Mold Co., Akron, Ohio
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana Ohio.
Bridgwater Machine Co., Akron, Ohio.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
De Mattia Bros., Garfield, N. J.
Franz Foundry & Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Kuhlke Machine Co., Akron, Ohio.
Mahlow & Wyckoff, Trenton, N. J.
Reynolds Machine Co., The, Massillon Ohio.
Williams Foundry & Machine Co., Akron, Ohio.

Motors.

Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Oil Testing Instruments.

Pagliabue, C. J., Mfg. Co., Brooklyn N. Y.

Painting Machines.

Utility Manufacturing Co., Cudahy, Wis

Pattern Makers.

Adamson Machine Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Bridgwater Machine Co., Akron, Ohio.
Farrel Foundry & Machine Co., Ansonia Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Pillow Blocks.

Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Fdry., Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Pipe Joints.

Bridgwater Machine Co., Akron, Ohio.
Diamond Metal Products Co., St. Louis, Mo.
Flexo Supply Co., St. Louis, Mo.
Loomis, E. G., Co., New York.
Utility Manufacturing Co., Cudahy, Wis.

Plantation Machinery.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia Conn.

Presses—Hydraulic

French Oil Mill Machinery Co., Piqua, Ohio.
Hydraulic Press Mfg. Co., Mount Gilead, Ohio.

Presses—Packing.

Black Rock Mfg. Co., The, Bridgeport, Conn.

For Complete Addresses See Advertisements—Index Page 110

WILLINGHAM
COTTON MILLS
MACON · · GEORGIA

Manufacturers
of
Hose *and* Belting Ducks
Wide Numbered Ducks
Press Cloths
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RUBBER HEEL BURRS
FLAT and CUPPED
Buy the Burrs with
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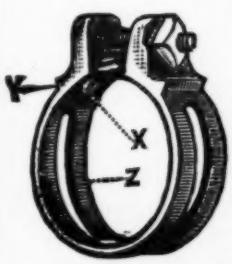


in all the desirable elements of Hose Service when you buy "YERDON'S" CAST BRASS HOSE BANDS.

Made of a Special, RUST-PROOF, composition metal, exceptionally strong and durable, they hold the hose firmly with a double, all-around "Grip" assuring a permanently tight connection. They can be used repeatedly and will be right on the job doing Efficient work long after others are scrapped and forgotten.

ALL sizes for hose ¾" O. D. up to the largest Suction Hose. Most satisfactory on automobile hose connections. Made in Fort Plain, U. S. A. Used everywhere. Unequalled by any.

We solicit your stock orders. If you don't know them write for samples. Both Home and Foreign trade supplied.

WILLIAM YERDON, Dept. C, Fort Plain, N. Y.

PRESSURE *and*
TEMPERATURE
in the Rubber Factory

Even with the careful selection of raw materials and the best equipment, complete and accurate control of pressure and temperature must be maintained. Proper vulcanization depends on this control and quality of the rubber product depends largely on proper vulcanization.

For thirty-six years Bristol's Recording Instruments have furnished a way to eliminate guess work in the vulcanizing room. They show you and make a permanent record of just what is going on inside of the heater or press.

Our catalog more fully describes our recording devices and their many applications in the rubber industry.

At the Philadelphia Sesqui-Centennial Exposition we will have a representative display of our complete line.

BRISTOL'S
The most extensive line of Recording Instruments including — Pressure, Liquid Level, Temperature, Electricity, Motion, Speed, Humidity, Etc.

The Bristol Company *Waterbury, Connecticut*
FOR 36 YEARS MAKERS OF
BRISTOL'S RECORDING INSTRUMENTS

RUBBER BUYERS' DIRECTORY —Rubber Machinery.

Presses—Rimming.

Adamson Machine Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa.
Southwark Foundry & Machine Co. Philadelphia, Pa.

Presses—Tiling.

Utility Manufacturing Co., Cudahy, Wis

Presses—Toggle

Dunning & Boschert Press Co., Inc., Syracuse, N. Y.

Presses—Vulcanizing.

Adamson Machine Co., The, Akron, Ohio
Akron Equipment Co., The, Akron, O.
Akron Rubber Mold & Machine Co. Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Bridgwater Machine Co., Akron, Ohio.
Burroughs Co., The, Newark N. J.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Dunning & Boschert Press Co., Inc Syracuse, N. Y.
Farrel F. & M. Co., Ansonia, Conn.
French Oil Mill Machinery Co., Piqua, Ohio.
Hydraulic Press Mfg. Co., Mount Gilead, Ohio.
Southwark Foundry & Machine Co Philadelphia, Pa.
Thropp, William R., Sons' Co., Trenton N. J.
Utility Manufacturing Co., Cudahy, Wis
Vaughn Machinery Co The, Cuyahoga Falls, Ohio.
Watson-Stillman Co., The, New York.
Williams Foundry & Machine Co Akron, O
Wood, R. D., & Co., Philadelphia, Pa.

Pumps.

Adamson Machine Co., The, Akron, Ohi
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Burroughs Co.: The, Newark, N. J.
Devine, J. P., Co., Buffalo, N. Y.
Dunning & Boschert Press Co., Inc Syracuse, N. Y.
French Oil Mill Machinery Co., Piqua, Ohio.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.

Pumps—Centrifugal.

Southwark Foundry & Machine Co Philadelphia, Pa.

Pumps—Vacuum.

Devine, J. P., Co., Buffalo, N. Y.

Racks and Frames.

Hoggson & Pettis Mfg. Co., New Haven Conn.

Reclaiming Machinery.

Adamson Machine Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa.
American Process Co., New York.
Biggs Boiler Works Co., The, Akron, Ohio
Birmingham Iron Foundry, Derby, Conn
Devine, J. P., Co., Buffalo, N. Y.
Farrel, F. & M., Co., Ansonia, Conn.
Housatonic M. & T. Co., Bridgeport Conn.
Taylor, Stiles & Co., Riegelsville, N. J
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Reclaiming Water Separators.

American Process Co., New York City.
Devine J P Co., Buffalo, N Y.
Louisville Drying Machinery Co., Louisville, Ky.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Recording Instruments.

For Pressure and Temperature.

Bristol Co., The, Waterbury, Conn.
Kendall, Frank E., Waltham, Mass.
Taglabue, C. J., Mfg. Co., Brooklyn, N. Y.
Farnall-Waring Co., Philadelphia, Pa.

Refiners.

Allen, Edward E., & Son, Erie, Pa.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Farrel Foundry & Machine Co., Ansonia Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Repair Equipment for Rubber Footwear.

Hoggson & Pettis Mfg. Co., The, New Haven, Conn.

Riveters.

Watson-Stillman Co., The, New York.

Rivets.

Sessions, J. H., & Son, Bristol, Conn.

Rollers and Stitchers—Hand.

Hoggson & Pettis Mfg. Co., New Haven Conn.
Wellman Co., Medford, Mass.

Rolls—Chilled.

Akron Rubber Mold & Machine Co., Akron, Ohio
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Curtis & Marble Mch. Co., Worcester, Mass.
Farrel Foundry & Machine Co., Ansonia Conn
Textile-Finishing Machinery Co., Providence, R. I.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Rubber Covering Machines.

New England Butt Co., Providence, R. I.

Rubber Scrap Cutters.

Taylor, Stiles & Co., Riegelsville, N. J.

Scales—Automatic Dial

Heavy Duty
Bench
Overhead Track
Hanging
Continuous—Sheet Weigher
Tire Testing
Counting
Special Purposes

Toledo Scale Co., Toledo, Ohio.

Scleroscopes.

Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

Sewing Machines.

Curtis & Marble Mch. Co., Worcester

Shafting.

Adamson Machine Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa.
Birmingham Iron Fdry., Derby, Conn
Farrel F. & M. Co., Ansonia, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Sheet Metal Specialties

Brass Goods Mfg. Co., Brooklyn, N. Y

Sherardizing.

New Haven Sherardizing Co., New Haven Conn.

Shoe Cars and Sticks.

Birmingham Iron Foundry, Derby, Conn
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.

Skiving Machines.

Allen Machine Co., Erie, Pa.
United Shoe Machinery Corporation, Boston, Mass.

Slitting and Re-Winding Machines.

Cameron Machine Co., Brooklyn, N. Y.

Solvent Recovery Apparatus.

Benzine Condensation Co., New York, N. Y.
Devine, J. P., Co., Buffalo, N. Y.

Special Machinery.

Akron Equipment Co., The, Akron, O.
Akron Rubber Mold & Mach. Co., Akron, Ohio.
Allen, Edward E., & Son, Erie, Pa.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Biggs Boiler Works Co., The, Akron, Ohio.
Birmingham Iron Foundry, Derby, Conn
Black Rock Mfg. Co., Bridgeport, Conn
Bridgwater Machine Co., Akron, Ohio.
De Mattia Bros., Garfield, N. J.
Farrel Foundry & Machine Co., Ansonia, Conn.
Frans Foundry & Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Kuhlke Machine Co., Akron, Ohio.
Smith, H. Monroe, Passaic, N. J.
Terkelsen Machine Co., Boston, Mass.
Utility Manufacturing Co., Cudahy, Wis.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.
Williams Foundry & Machine Co., The Akron, Ohio.
Wills, Arthur Jackson, North Brookfield, Mass.

Spreaders.

Adamson Machine Co., The, Akron, Ohio.
Birmingham Iron Foundry, Derby, Conn.
New England Butt Co., Providence, R. I.
Textile-Finishing Machinery Co., Providence, R. I.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Sprockets.

Spring Silent Chain. Compensating.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.

Steel Stampings.

Sessions, J. H., & Son, Bristol, Conn.

Steel Stamps.

Hoggson & Pettis Mfg. Co., New Haven Conn.
Wellman Co., Medford, Mass.

Stitchers.

Akron Rubber Mold & Machine Co., Akron, Ohio.
Hoggson & Pettis Mfg. Co., New Haven, Conn.

Stock Shells.

Gammeter, W. F., Co., The, Cadiz, Ohio
New Haven Sherardizing Co., Hartford, Conn.

Straining Machines.

Royle, John, & Sons, Paterson, N. J.

Strip Cutters.

Birmingham Iron Foundry, Derby, Conn
Cameron Machine Co., Brooklyn, N. Y.
New England Butt Co., Providence, R. I
Spadone Machine Co., Inc., New York.

Stripping Tables.

Akron Standard Mold Co., Akron, Ohio.
Banner Machine Co., The, Columbiana Ohio.
Williams Foundry & Machine Co., The Akron, Ohio.

Swing Joints.

Adamson Machine Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa
Bridgwater Machine Co., Akron, Ohio.
Diamond Metal Products Co., St. Louis, Mo.
Fleyo Supply Co., St. Louis Mo.
Loomis, E. G., Co., New York.
Williams, Franklin, Inc., New York.

Tanks, Storage—Oil and Gasoline.

Biggs Boiler Works Co., Akron, O.

Testing Machines.

Shore Instrument & Mfg. Co., The, Jamaica, N. Y.

Thermometers.

Bristol Co., The, Waterbury, Conn.
Taglabue, C. J., Mfg. Co., Brooklyn, N. Y.

Tire Building Equipment.

Adamson Machine Co., The, Akron, Ohio.
Akron Equipment Co., The, Akron, O.
Akron Rubber Mold & Machine Co., Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Fdy., Derby, Conn.
Bridgwater Machine Co., Akron, Ohio.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
De Mattia Bros., Inc., Garfield, N. J.
Utility Manufacturing Co., Cudahy, Wis.
Williams Fdy. & Mach. Co., Akron, O.

Tire Building Machines.

Banner Machine Co., The Columbiana Ohio.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.

Tire Building Stands.

Banner Machine Co., The, Columbiana Ohio.
De Mattia Bros., Garfield, N. J.
Williams Foundry & Machine Co., The Akron, Ohio.

Tire Lasts.

Williams Foundry & Machine Co., The Akron, Ohio.

Tire Machine Drums.

Gammeter, W. F., Co., The, Cadiz, Ohio

Tire Presses.

Adamson Machine Co., The, Akron, Ohio
Akron Equipment Co., The, Akron, Ohio
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Watson-Stillman Co., The, New York.
Williams Foundry & Machine Co., The Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

Tire Rebuilding and Repair Equipment.

Biggs Boiler Works Co., The, Akron, O.
Frans Foundry & Machine Co., Akron Ohio.
Hoggson & Pettis Mfg. Co., The, New Haven, Conn.
Williams, F. & M. Co., Akron, Ohio.

Tire Vulcanizing Presses.

Adamson Machine Co., The, Akron, O.
Akron Equipment Co., The, Akron, O.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Williams, F. & M. Co., Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

Tire Wrapping Machines.

Adamson Machine Co., The, Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana Ohio.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Terkelsen Machine Co., Boston, Mass.

For Complete Addresses See Advertisements—Index Page 110

"The Toledo Scale has saved us from 20 to 30 seconds on the weighing of each package"

—Spencer Kellogg & Sons Inc.

THE statement above is quoted from a letter from the Cincinnati branch of Spencer Kellogg & Sons Inc., manufacturers and national distributors of linseed oil.

This is one specific case out of many in all lines of industry in which savings are accomplished by the use of Toledo automatic scales.

Material usually is weighed or parts counted:

When received.
When issued to production departments.
In transit between departments.
During manufacturing processes.
For cost records or inventory.
To determine the pay for piece work.
To determine freight or express charges or postage.
To determine the amount of invoice for the product itself.
For special purposes.

Time is wasted and mistakes made in these frequent operations, when workmen have to put on and take off loose counterbalance weights, move a poise on a weigh beam, judge when the beam is in balance, read the weight indicated in small figures and markings on a beam from 12 to 24 inches, and add to this the values of the loose weights.

With Toledos the operator has only to put on the load and read the weight in plain figures on a dial from 5 to 7 feet in circumference. Toledos save thousands of half-minutes and stop thousands of small losses.

A check by a Toledo scale man will show whether losses occur in the weighing or counting operations in your plant. This check will cost you nothing. It may save you much. Write us for particulars. Kindly address Industrial Sales Department, Section O.

Scales for The Rubber Industry

In use in the rubber industry, there are Toledo Automatic Scales especially adapted for:

General Weighing
Weighing Continuous Sheet Products
Weighing Tire Treads
Weighing Tires
Counting
Determining Weight per Yard of Fabric in the Bolt
Overhead Track Scales
Portable Platform Scales
Floor Scales
Auto Truck Scales
Postal Scales

Toledo Scale Company, Toledo, Ohio
Canadian Toledo Scale Co., Limited, Windsor, Ont.
Manufacturers of Automatic Scales for Every Purpose
Offices and Service Stations in 106 Cities in the United States and Canada

TOLEDO SCALES
NO SPRINGS HONEST WEIGHT

RUBBER BUYERS' DIRECTORY—Rubber Machinery, Second Hand Machinery, Raw Materials and Supplies.

Transmission Machinery.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Farrel Foundry & Machine Co., Ansonia, Conn.

Tread Making Machines.

Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Trimmers.

Banner Machine Co., The, Columbiana, Ohio.
Bridgwater Machine Co., Akron, Ohio.
Morris, T. W., Chicago, Ill.
Wills, Arthur Jackson, North Brookfield, Mass.

Tube Coiling & Boxing Machines

H. Monroe Smith, Passaic, N. J.

Tube Cutting Machines.

H. Monroe Smith, Passaic, N. J.

Tube Skiving Machines

Allen Machine Co., Erie, Pa.

Tube Wrapping Machines.

Akron Rubber Mold & Machine Co., Akron, Ohio.
Akron Standard Mold Co., Akron, Ohio.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Black Rock Mfg. Co., The, Bridgeport, Conn.
Williams Foundry & Machine Co., The, Akron, Ohio.

Tubing Machines.

Adamson Machine Co., Akron, O.
Akron Rubber Mold & Machine Co., Akron, O.
Allen, Edward E., & Son, Erie, Pa.
Allen Machine Co., Erie, Pa.
Monsatonic Mach. & Tool Co., Bridgeport, Conn.
Royle, John, & Sons, Paterson, N. J.

Tubing Machine Attachments.

Automatic Revolving Pans.
Inside Soapstoning.
Outside Soapstoning.
Traveling Aprons.

H. Monroe Smith, Passaic, N. J.

Vacuum Cloth Impregnating Equipment.

Banner Machine Co., The, Columbiana, Ohio.
Devine, J. P., Co., Buffalo, N. Y.

Valve Grinders.

Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Quaker City Rubber Co., Philadelphia, Pa.

Valves.

Burroughs Co., The, Newark, N. J.
Dunning & Boschert Press Co., Inc., Syracuse, N. Y.
Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Southwark Foundry & Machine Co., Philadelphia, Pa.
Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.
Utility Manufacturing Co., Cudahy, Wis.
Yarnall-Waring Co., Philadelphia, Pa.

Valves (Reducing).

Tagliabue, C. J., Mfg. Co., Brooklyn, N. Y.

Valves—Two Pressure

Pittsburgh Valve, Foundry & Construction Co., Pittsburgh, Pa.
Yarnall-Waring Co., Philadelphia, Pa.

Varnishing Machines.

Birmingham Iron Foundry, Derby, Conn.

Vulcanizers.

Adamson Machine Co., Akron, O.
Akron Equipment Co., The, Akron, Ohio.
Akron Rubber Mold & Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Bigga Boiler Works Co., Akron, O.
Birmingham Iron Foundry, Derby, Conn.
Bridgwater Machine Co., Akron, Ohio.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Devine, J. P., Co., Buffalo, N. Y.
Dykes, John L. G., Chicago, Ill.
Fisk Rubber Co., Chicopee Falls, Mass.

Vulcanizers—Continued.

Southwark Fdy. & Mach. Co., Phila, Pa.
Thropp, William R., Sons' Co., Trenton, N. J.
Utility Manufacturing Co., Cudahy, Wis.
Williams F. & M. Co., Akron, Ohio.
Wood, R. D., & Co., Philadelphia, Pa.

Vulcanizers—Individual Tire

Akron Standard Mold Co., Akron, Ohio.
De Mattia Bros., Garfield, N. J.
Utility Manufacturing Co., Cudahy, Wis.

Washers.

Adamson Machine Co., The, Akron, Ohio.
Allen Machine Co., Erie, Pa.
Birmingham Iron Foundry, Derby, Conn.
de Laski & Thropp Circular Woven Tire Co., The, Trenton, N. J.
Devine, J. P., Co., Buffalo, N. Y.
Farrel F. & M. Co., Ansonia, Conn.
Thropp, William R., Sons' Co., Trenton, N. J.
Vaughn Machinery Co., The, Cuyahoga Falls, Ohio.

Washers—Light Steel for Rubber Heels.

Sessions, J. H., & Son, Bristol, Conn.

Washers—Setting Machine for Heel Molds.

Utility Manufacturing Co., Cudahy, Wis.

Worm Drives

De Laval Steam Turbine Co., The, Trenton, N. J.

Wrapping Machines.

Adamson Machine Co., Akron, O.
Allen Machine Co., Erie, Pa.
Banner Machine Co., The, Columbiana, Ohio.
Birmingham Iron Foundry, Derby, Conn.
Farrel F. & M. Co., Ansonia, Conn.

Wrapping Machines—Cloth

Terkelsen Machine Co., Boston, Mass.

Wrapping Machines—Paper.

Terkelsen Machine Co., Boston, Mass.

For Complete Addresses See Advertisements—Index Page 110

SECOND-HAND MACHINERY

Albert, L., & Son, Trenton, N. J.
Barry, Lawrence N., Boston, Mass.
Norton, M., & Co., Medford, Mass.
Surplus Trading Corp., The, Newark, N. J.
United Rubber Machinery Exchange, Newark, N. J.

RAW MATERIALS AND SUPPLIES

Accelerators.

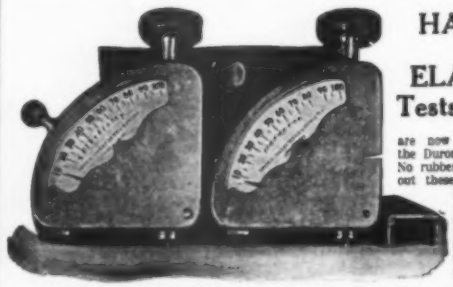
American Cyanamid Co., New York, N. Y.
Bullock, E. L., & Sons, Inc., New York
Duvan Chemical Corporation, New York
Du Pont, E. I., de Nemours & Co., Inc., Wilmington, Del.
Grasselli Chemical Co., New York, N. Y.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Naugatuck Chemical Co., Naugatuck, Conn. (N. C. C.)
Roessler & Hasslacher Chemical Co., New York.
Vanderbilt, R. T., Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Acids.

Bullock, E. L., & Sons, Inc., New York
Grasselli Chemical Co., New York.
Naugatuck Chemical Co., Naugatuck, Conn.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Acid—Stearic.

Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.



HARDNESS and ELASTICITY Tests of Rubber

are now regularly made with the Durometer and Elastometer. No rubber man should be without these. They are used as pocket instruments, or attachable to bench stands, and fit will make thousands of tests per day. WRITE FOR DESCRIPTIVE PAMPHLET.

THE SHORE INSTRUMENT & MFG. CO.
VAN WYCK AVENUE AND CARLL ST. JAMAICA, NEW YORK
Agents for Great Britain, Coats Machine Tool Co., Ltd., London. For Germany, Italy and Spain, Alfred H. Schutte, Köln-Deutz, etc.

Whitall Tatum Company
Manufacturers of
DRUGGISTS' RUBBER SUNDRIES
MOLDED GOODS AND GLASSWARE

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RUBBER WORKS
KEYPORT, N. J.

GLASS WORKS
MILLVILLE, N. J.
EAST STROUDSBURG, PA.

OFFICES:
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PHILADELPHIA
BOSTON
CHICAGO
SAN FRANCISCO
SYDNEY, N. S. W.
BUENOS AIRES, A. R.

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NEW JERSEY RUBBER COMPANY
EXPERT RECLAIMERS OF TIRE FRICTIONS
LAMBERTVILLE, NEW JERSEY

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CANFIELD RUBBER CO.
Railroad Avenue, BRIDGEPORT, CONN.
Manufactured to Buyers' Specification and Standard Grades.
Rings, Washers, Valves, Bumpers, Etc.
We solicit inquiries for quotations and samples.

NEW STYLE F. S.

TUXEDA SWING JOINTS

A new improved design to remedy present defects in flexible connection problems —with the following features:

Floating Spindle

Parts Subject to Corrosion in Sealed Compartment

No Relative Motion of Parts Due to Wear

Exceptionally Long Life

Franklin Williams INC.

Jefferson St., Newark, N. J.

aerfloted

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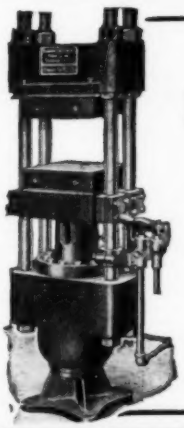

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For Bakelite Condensite Redmanol

and other Plastics. SEMI-AUTOMATIC or plain. Any size, any pressure. Also Accumulators, Pumps, Valves, Etc. Let us tell you more about them.

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Manufacturers of

Hard Rubber Goods of every description

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THE H. O. CANFIELD CO.

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Moulded Specialties, Plumbers' Rubber Goods, Valves, Gaskets; Hose Washers; and Cut Washers of all kinds.

Write for prices and samples

Office and Works - - - - Bridgeport, Ct.

RUBBER BUYERS' DIRECTORY—Raw Materials and Supplies.

Acids—Sulphuric

Grasselli Chemical Co., New York.
New Jersey Zinc Sales Co., New York.
Scheel, William H., New York.

Alba Whiting.

Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Aluminum Flake.

Aluminum Flake Co., Barberton, Ohio.
Scheel, William H., New York.
Typke & King, London, England.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Aniline

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Grasselli Dyestuff Corp., New York, N. Y.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York N. Y.
Naugatuck Chemical Co., Naugatuck, Conn.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Antimony, Sulphurets of.

Golden and Crimson.

Atlas Chemical Co., Waltham, Mass.
Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Naugatuck Chemical Co., Naugatuck, Conn.
Rare Metal Products Co., Belleville, N. J.
Roessler & Hasslacher Chemical Co., New York.
Rubber Service Laboratories, The, Akron, Ohio.
Scheel, William H., New York.
Typke & King, Ltd., Mitcham, England.
Tyson Bros., Inc., Woodbridge, N. J.
Wishnick Tumpeer Chemical Co., Chicago, Ill.

Artificial Rubber.

Ashley, T. C., & Co., Boston, Mass.
Carter Bell Mfg. Co., New York.
Scheel, William H., New York.
Stamford Rubber Supply Co., Stamford, Conn.
Typke & King, London, England.
Tyson Bros., Inc., Woodbridge, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Asbestine.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
International Pulp Co., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Balata.

Astlett & Co., H. A., New York.
Chipman, R. L., New York.
Dunbar, J. Frank, Co., Inc., New York.
Hardy, R. S., Co., New York City.
Jacoby, Ernest, Boston, Mass.

Barium Dust.

Vanderbilt, R. T., Co., New York.

Barium Sulphate—See Barytes

Barium Sulphate Precipitated—See Blanc Fixe

Barytes.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York, N. Y.
Thompson, Weinman & Co., Inc., New York.
Tyson Bros., Inc., Woodbridge, N. J.
Vanderbilt, R. T., Co., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Basofor.

Waldo, E. M. & F., Inc., Muirkirk, Md.

Benzol.

Bullock, E. L., & Sons, Inc., New York.
Cabot, Samuel, Boston, Mass.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Tyson Bros., Inc., Carteret, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Black Hypo.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Typke & King, London, England.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Blanc Fixe.

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Vanderbilt, R. T., Co., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Bolted Lime.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Boxes—Packing

Mid-West Box Co., Chicago, Ill.

Cadmium Yellow.

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.

Cadmium Yellow—Continued.

Roessler & Hasslacher Chemical Co., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Carbon Bisulphide and Tetrachloride.

Bullock, E. L., & Sons, Inc., New York.
Dow Chemical Co., The, Midland, Mich.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Carbon Black.

Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Cabot, Godfrey L., Boston, Mass.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Sharer & Co., Boston, Mass.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Catalpo

Moore & Munger, New York City.

Caustic Soda.

Bullock, E. L., & Sons, Inc., New York.
Dow Chemical Co., The, Midland, Mich.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Cement (Rubber).

Dominion Rubber Co., Ltd., Montreal, Canada.
Essex Rubber Co., Trenton, N. J.
Hale, Alfred, Rubber Co., Boston, Mass.
New York Belting & Packing Co., N. Y.
United States Rubber Co., New York.

Chemicals and Ingredients.

Ashley, T. C., & Co., Boston, Mass.
Barrett Co., The, New York.
Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Tyson Bros., Inc., Woodbridge, N. J.
Vanderbilt, R. T., Co., New York, N. Y.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Westmoreland Chemical & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Clays.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York, N. Y.
Taintor Co., The, New York.
Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Williams & Co., C. K., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Colors.

Ault & Wiborg Co., New York.
Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Grasselli Chemical Co., New York.
Grasselli Dyestuff Corp., New York, N. Y.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Huber, J. M., Inc., New York.
Innis, Speiden & Co., Inc., New York City.
McNulty, Joseph A., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Typke & King, London, England.
Tyson Bros., Inc., Woodbridge, N. J.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Westmoreland Chem. & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago Ill.

Colors—Balloon.

Bullock, E. L., & Sons, Inc., New York
Grasselli Chemical Co., New York.
National Aniline & Chemical Co., New York.

Cotton Flock.

Claremont Waste Mfg. Co., Claremont, N. H.

Cotton Goods.

Ducks and Drills.

Adams, H. J., Co., The, Akron, Ohio
Callaway Mills, Inc., New York.
Curran & Barry, New York.
Lane, J. H., & Co., New York and Chicago.
Lawrence & Co., New York.

Osnaburgs.

Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Curran & Barry, New York.
Lane, J. H., & Co., New York and Chicago.

Sheetings.

Adams, H. J., Co., The, Akron, Ohio.
Callaway Mills, Inc., New York.
Lane, J. H., & Co., New York and Chicago.

Stockinettes.

United States Knitting Co., Pawtucket, R. I.

Tire Fabrics.

Adams, H. J., Co., The, Akron, Ohio.
Bibb Mfg. Co., Macon, Ga.
Brighton Mills, Passaic, N. J.

For Complete Addresses See Advertisements—Index Page 110

CUMAR

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A Neutral Gum
for
Rubber Compounding

Clean and free from grit—
Resists water, acid, alkalies

Hard and Soft Grades

Samples, price and descriptive literature will gladly be sent upon request

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The GRITLESS
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RUBBER COLORS
has established their reputation in the trade.

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LABORATORY
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CINCINNATI, OHIO
Stock carried at New York and Cincinnati

UNITED STATES KNITTING CO.
Pawtucket, R. I.

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STOCKINET
and fine worsted
JERSEY CLOTH
for the rubber shoe trade.

Also

Special Stockinet Fabrics
for the general rubber trades

Western Rep.—A. L. PARDEE
512 Ohio Bldg., Akron, Ohio.

Canadian and Export Trade served by

CANADIAN U.S. KNITTING CO., Ltd.
St. Hyacinthe, P. Q., Canada

RUBBER BUYERS' DIRECTORY — Raw Materials and Supplies.

Cotton Goods—Continued.

Tire Fabrics—Continued.

Callaway Mills, Inc., New York.
Lane, J. H., & Co., New York and Chicago.
Lawrence & Co., New York.
Salmon Falls Mfg. Co., Boston, Mass.
Willingham Cotton Mills, Macon, Ga.

Tire Tape.

Adams, H. J., Co., The, Akron, Ohio.

Fillers.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speidon & Co., Inc., New York.
Mackey Products Co., Cleveland, Ohio.
Thompson, Weinman & Co., Inc., New York.
Vanderbilt, R. T., New York, N. Y.
Whittaker, Clark & Daniels, Inc., New York.

Fossil Flour—Infusorial Earth

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.

Gilsonite.

Barber Asphalt Co., The, Philadelphia, Pa.
Bullock, E. L., & Sons, Inc., New York.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Graphite.

Bullock, E. L., & Sons, Inc., New York.
Innis, Speiden & Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Green Oxide of Chromium.

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Waldo, E. M., & F., Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Guayule Rubber.

Baird Rubber & Trading Co., New York.
Continental Rubber Co., New York.
Wilson, Charles T., Co., Inc., New York.

Gutta-Percha.

Astlett, H. A., & Co., New York.
Baird Rubber & Trading Co., New York.
Chipman, R. L., New York.
Dunbar, J. Frank, Co., Inc., New York.
Hankin, Geo., & Co., London, England.
Hardy, R. S., Co., New York City.
Jacoby, Ernest, Boston, Mass.

Hard Rubber Dust.

Defiance Rubber Co., The, Defiance, Ohio.
Muehlstein, H., & Co., Inc., New York.
Somerset Rubber Reclaiming Works, New Brunswick, N. J.
Weber, Hermann, Hoboken, N. J.

Hexamethylene Tetramine

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., The, New York.

Hydro-Carbon Products.

Barrett Co., The, New York.
Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Ohlmac Paint & Refining Co., Chicago, Ill.
Robertson, H. H., Co., Pittsburgh, Pa.
Scheel, William H., New York.
Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Infusorial Earth — See Fossil Flour.

Iron Oxide—See Red Oxide

Lampblack.

Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Cabot, Samuel, Boston, Mass.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Tyson Bros., Inc., Woodbridge, N. J.

Lampblack—Continued

Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Lead—Blue. Lead—Sublimed White.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Lime Flour.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., N. Y.

Liners, Treated.

Cleveland Liner & Mfg. Co., The, Cleveland, Ohio.

Litharge.

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Lithopone.

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
New Jersey Zinc Sales Co., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., N. Y.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Magnesia Carbonate

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Roessler & Hasslacher Chemical Co., New York.

Magnesia Carbonate—Continued

Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., N. Y.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Magnesia Oxide (Calcined)

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Marking and Stencil Ink.

Binney & Smith Co., New York, N. Y.

Mica.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., N. Y.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Mineral Rubber.

Barber Asphalt Co., Philadelphia, Pa.
Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York.
Ohlmac Paint & Refining Co., Chicago, Ill.
Pioneer Asphalt Co., Lawrenceville, Ill.
Robertson, H. H., Co., Pittsburgh, Pa.
Scheel, William H., New York.
Synthetic Products Co., Cleveland, Ohio.
Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Montan Wax.

Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Oils—Palm

Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Oils — Tar, Pine, Creosote, Rosin, Turpentine.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

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Oils—Vegetable.

Bullock, E. L., & Sons, Inc., New York.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Oleate—Lead.

Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Petrolatum.

Bullock, E. L., & Sons, Inc., New York.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Vanderbilt, R. T., Co., New York.

Pigments.

Aluminum Flake Co., Barberton, Ohio.
Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
New Jersey Zinc Sales Co., The, New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Westmoreland Chemical & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Pine Tar.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Pitch.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Precipitated Chalk.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Pumice Stone.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

"Quaker" Whiting.

Vanderbilt, R. T., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.

Reclaimed Rubber.

Appleton Rubber Co., Franklin, Mass.
Bloomingdale Rubber Co., New York, N. Y.
Clapp, E. H., Rubber Co., Boston, Mass.
Defiance Rubber Co., Defiance, Ohio.
Manhattan Rubber Mfg. Co., Passaic, N. J.
Nearpara Rubber Co., Trenton, N. J.
New Jersey Rub. Co., Lambertville, N. J.
Pequanoc Rubber Co., Butler, N. J.
Philadelphia Rubber Works, Philadelphia, Pa.
Rubber Regenerating Co., Naugatuck, Conn.
Somerset Rubber Reclaiming Works, New Brunswick, N. J.
U. S. Rubber Reclaiming Co., Inc., N. Y.
Vulcan Recovery Co., Trenton, N. J.
Xylos Rubber Co., Akron, Ohio.

Red Oxide.

Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Huber, J. M., Inc., New York.
Innis, Speiden & Co., Inc., New York City.
McNulty, Joseph A., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Tyson Bros., Inc., Woodbridge, N. J.
Waldo, E. M. & F., Inc., Muirkirk, Md.
Westmoreland Chemical & Color Co., Philadelphia, Pa.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Resin.

Bullock, E. L., & Sons, Inc., New York.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Rosin.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Rotten Stone.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.

Rubber Brokers.

Buckleton & Company, Limited, Liverpool, England.
Hipman, R. L., New York.
Dunbar, F. W., & Co., Inc., New York.
Dunbar, J. Frank, Co., Inc., New York.
Hardy, Roger S., New York.
Henderson Brothers & Co., Inc., New York City.
H. Henta & Co., New York.
Jacoby, Ernest, Boston, Mass.

Rubber—Importers and Exporters.

Araujo, J. G., Manaos, Brazil, S. A.
Astlett, H. A., & Co., New York.
Baird Rubber & Trading Co., New York.
Chalifin, Joseph, & Co., Inc., New York.
Rankin, Geo., & Co., London, England.
Hirsch, Adolph, & Co., New York.
Muehlstein, H. & Co., Inc., New York.
Wilson, Charles T., Co., Inc., New York.

Rubber—Latex.

Buckleton & Company, Ltd., Liverpool England.
Rankin, Geo., & Co., London, England.
Rylee, W. E., New York, Agent.
Hardy, R. S., Co., New York.
Jacoby, Ernest, Boston, Mass.
Vanderbilt, R. T., New York, N. Y.

Rubber—Washed and Dried.

Cushnet Process Co., New Bedford, Mass.
Araujo, J. G., Manaos, Brazil, S. A.
Continental Rubber Co., New York.

Rubber Flux.

Synthetic Products Co., Cleveland, Ohio.
Vanderbilt, R. T., Co., New York, N. Y.

Rubber Makers' White.

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Rubber Softener.

Damascus Manufacturing Corporation, Cleveland, Ohio.
Mackey Products Co., Cleveland, Ohio.
Vanderbilt, R. T., Co., New York, N. Y.

Rubber Substitutes.

Ashley, T. C., & Co., Boston, Mass.
Bullock, E. L., & Sons, Inc., New York.
Carter Bell Mfg. Co., New York.
Jacoby, Ernest, Boston, Mass.
Scheel, Wm. H., New York.
Stamford Rubber Supply Co., Stamford, Conn.
Tyrke & King, London, England.

Rubber Substitutes—Continued

Tyson Bros., Inc., Woodbridge, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Scrap Rubber.

Birkenstein, S., & Sons, Chicago, Ill.
Chalifin, Joseph, & Co., Inc., New York.
Cummings, Wm. H., & Sons, New York.
Muehlstein, H., & Co., Inc., New York.
Norton, M., & Co., Medford, Mass.
Schnurmann, J., London, England.
Weber, Hermann, Hoboken, N. J.

Silica.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Slate Flour.

Chrystal, Charles B., Co., Inc., New York City.

Soap Bark.

Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Soapstone.

Binney & Smith Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Solvents

Naphtha.

Hartol Products Corp., Newark, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Starch—Corn.

Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Sulphur.

Battelle & Renwick, New York.
Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Southern Acid & Sulphur Co., St. Louis, Missouri.
Stauffer Chemical Co., Houston, Texas.

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Sulphur—Continued.

White, T. & S. C., Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Sulphur Chloride.

Ashley, T. C. & Co., Boston, Mass.
Bullock, E. L., & Sons, Inc., New York.
Carter Bell Mfg. Co., New York.
Dow Chemical Co., The, Midland, Mich.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Scheel, William H., New York.
Stamford Rubber Supply Co., Stamford, Conn.
Tyson Bros., Inc., Woodbridge, N. J.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Talc.

Binney & Smith Co., New York.
Bullock, E. L. & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Vanderbilt, R. T. Co. Inc. New York
Waldo, E. M., & F., Inc., Muirkirk, Md.
Whittaker, Clark & Daniels, Inc., New York.
Williams, C. K., & Co., Easton, Pa.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Thiocarbanilid.

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.

Tripoli Flour.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Unvulcanized Rubber

Gibraltar Rubber Corp., West New York, N. J.

Varnishes—Rubber.

Monroe Sander Corporation, Long Island City, N. Y.

Wax

Bullock, E. L., & Sons, Inc., New York.
Damascus Manufacturing Corporation, Cleveland, Ohio.
Dunbar, J. Frank, Co., Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
Scheel, William H., New York.
Vanderbilt, R. T., Co., New York.
Wishnick Tumpeer Chemical Co., Chicago, Ill.

White and Blue Lead, Sublimed.

Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill

Whiting.

Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.

Whiting—Continued.

Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York
Southwark Manufacturing Co., Camden, N. J.
Taintor Co., The, New York.
Thompson, Weinman & Co., Inc., New York.
Tyson Bros., Inc., Woodbridge, N. J.
Vanderbilt, R. T., & Co., Inc., New York.
Whittaker, Clark & Daniels, Inc., New York.
Weeping Water S. Co., The, Weeping Water, Nebr.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Wood Flour.

Bullock, E. L., & Sons, Inc., New York.
Grasselli Chemical Co., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Zinc, Oxide of.

American Zinc Sales Co., New York.
Bullock, E. L., & Sons, Inc., New York.
Chrystal, Charles B., Co., Inc., New York City.
Grasselli Chemical Co., New York.
Harshaw, Fuller & Goodwin Co., Cleveland, Ohio.
Innis, Speiden & Co., Inc., New York City.
New Jersey Zinc Sales Co., New York.
Roessler & Hasslacher Chemical Co., New York.
Scheel, William H., New York.
Whittaker, Clark & Daniels, Inc., New York.
Wishnick-Tumpeer Chemical Co., Chicago, Ill.

Zinc Substitute.

Bullock, E. L., & Sons, Inc., New York.
Scheel, William H., New York.

Zinc Sulphide.

Bullock, E. L., & Sons, Inc., New York.
Harshaw, Fuller & Goodwin Co., The, Cleveland, Ohio.

MISCELLANEOUS

Banking.

International Acceptance Bank, Inc., New York.

Consulting Rubber Chemists.

Maywald, Dr. F. J., Belleville, N. J.
Tuttle, John B., New York.

Consulting Rubber Engineer

Dunbar, Wilmer, Greensberg, Pa.

Consulting Rubber Technologists.

Norris, Webster, Hempstead, N. Y.
Maywald, F. J., Dr., Belleville, N. J.
Tuttle, John B., New York.

Patent Attorneys.

Munn & Co., New York.

Rubber Plant Engineers

Consulting Co., The, Cincinnati, Ohio.

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The Industry demands an accelerator possessing the qualities of Diphenylguanidine. It is the ability of this accelerator to meet the requirements for every class of stock that has established its enviable reputation.

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will both see the improvement in the quality of your finished product after you have standardized on Azo ZZZ, the lead free zinc oxide.

Purity of content and color are assured you in Azo ZZZ and uniformity —well, the man who mixes it will tell you, it is always the same high grade.

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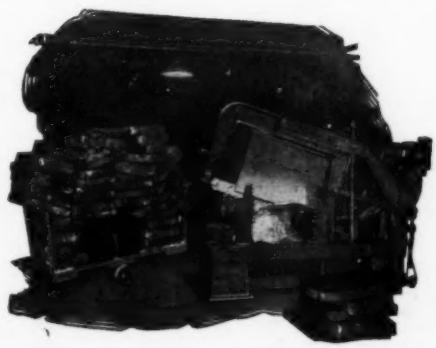

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